# SARGENTIA

A CONTINUATION OF THE
CONTRIBUTIONS FROM THE ARNOLD ARBORETUM
OF HARVARD UNIVERSITY

I

## FIJIAN PLANT STUDIES, II

Botanical Results of the 1940–41 Cruise of the "Cheng Ho"

BY

A. C. SMITH (and collaborators)

WITH FIVE TEXT-FIGURES

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SARGENTIA

A Continuation of the
Contributions from the Arnold Arboretum
of Harvard University

No. I, pp. i–iv, 1–148, with five text-figures

Issued July 20th, 1942

This first number of Sargentia is dedicated to Mrs. Anne Archbold, of Washington, D. C., in appreciation of her interest in and support of botanical investigations through the Philippine–Moluccas and the Pacific cruises of the "Cheng Ho," 1939–1941.

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# SARGENTIA: A WORD OF EXPLANATION

E. D. Merrill

In 1932 there was established at the Arnold Arboretum a series of publications under the general title of "Contributions from the Arnold Arboretum of Harvard University," planned to accommodate larger papers that were too extensive for publication in ordinary serial literature. Between 1932 and 1938 eleven numbers of this series appeared, varying in size from 91 to 230 pages each, as listed on the third page of the cover of the present publication. This new series, under the one-word title Sargentia, is planned to take similar future papers, and it is expected that future numbers will be issued at irregular intervals as material becomes ready for publication and as funds may be available to cover printing costs.

From long bibliographic experience, I have become more and more impressed with the desirability of simple one-word titles for periodicals. The principle of one-word titles was established, in the botanical field, early in the past century, with such serials as Linnaea (1826–1882), Flora (1818–1942), and numerous others, but for the most part the titles of scientific periodicals, in botany as in other branches of science, have been composed of several words. Not infrequently these titles are unduly long and cumbersome, causing considerable difficulties to bibliographers who must cite them in some intelligible abbreviated form. Generally speaking, individuals connected with sponsoring institutions have felt impelled to use in their titles the name of the institution or organization that supports the publication, without much regard for convenience, descriptiveness, or brevity. My personal feeling is that there is little need of glorifying the name of the sponsoring unit when a short and appropriate title may be evolved from the name of some individual prominent in the history and development of the institution itself.

Thus, in 1925, while serving as Dean of the College of Agriculture of the University of California, dissatisfied with a very long and cumbersome title for one series of technical papers that had been established in 1923, I discontinued this series and established in its place the technical periodical Hilgardia, with a descriptive subtitle "A Journal of Agricultural Science published by the California Agricultural Experiment Station." This, the first real serial in the history of the vast American Agricultural Experiment Station literature, other than the "Experiment Station Record" published by the United States Department of Agriculture, is now in its fourteenth volume and is still the only periodical in this field with a one-word title. It was named in honor of an outstanding pioneer in agricultural education and research, Dr. Eugene Woldemar Hilgard (1833–1916), who organized the agricultural department of the University of California and who founded the California Agricultural Experiment Station in 1875. In 1931, while serving as Director of the New York Botanical Garden, I established the technical periodical Brittonia, named in honor of Dr. Nathaniel Lord Britton, who organized the Garden and served as its first Director, from 1896 to 1929; the descriptive subtitle in this case was "A series of botanical papers." This is now in its fourth volume. Finally, in 1941, the name of the Arnold Arboretum's

"Bulletin of Popular Information" (1911–1940) was changed to ARNOLDIA, with an explanatory subtitle "A continuation of the Bulletin of Popular Information of the Arnold Arboretum, Harvard University." This title honors James Arnold (1781–1868), whose bequest of $100,000 in 1868 led to the establishment of the institution that bears his name.

The selection of the name SARGENTIA for this new series of technical papers needs little explanation. It is dedicated to Dr. Charles Sprague Sargent (1841–1927), who organized the Arnold Arboretum and served as its first Director from 1872 until his death in 1927. It was due to Dr. Sargent's vision, ability, initiative, and support that, from the small beginnings of 1872, there was built up during his lifetime an institution national and international in character, widely and favorably known not only as a garden famed for the beauty of its landscape and for the vast number of living plants that make up its collections, but also as an outstanding research institution with its unsurpassed library, its great herbarium, and its laboratories, and as a publishing institution ranking high in its field. It seems to be eminently fitting that this series of papers, sponsored by the institution that essentially represents the life-work of Charles Sprague Sargent, should bear his name.

# FIJIAN PLANT STUDIES, II[1]

## BOTANICAL RESULTS OF THE 1940–41 CRUISE OF THE "CHENG HO"

A. C. Smith (and collaborators)

*with five text-figures*

The greater part of the material which forms the basis of this treatment was collected in Fiji in 1940–41 by Mr. Otto Degener, a member of the Pacific cruise of the "Cheng Ho," sponsored by Mrs. Anne Archbold. The botanical collections were made with the cooperation of the Arnold Arboretum and the New York Botanical Garden. Mr. Degener obtained about 2100 field numbers, mostly represented by many duplicates. After the conclusion of his field work in June, 1941, additional specimens were collected and forwarded by one of his Fijian assistants.

The area covered by members of the expedition centered on the largest island, Viti Levu, where numerous regions near the coasts were visited. Mr. Degener also spent several weeks in the mountains of Tholo North Province, and additional work was done in the Savu Savu Bay region of Vanua Levu. A few smaller islands were briefly visited. Much of the credit for the success of Mr. Degener's work, he informs me, should be given to his several assistants, and especially to Emilio Ordonez of Honolulu and Aloisio Tabualewa and Timoci Bebe of Viti Levu. The collection was made possible primarily by the generosity of Mrs. Archbold, and to her the writer is especially grateful, as the material assembled during the cruise of the "Cheng Ho" proves to be of great importance in a study of the Pacific flora. It has been a pleasure for the writer and his associates to name several species in honor of Mrs. Archbold.

While working on the Degener material, I have taken the opportunity to re-examine many of the older collections, of which some specimens remained undetermined or only provisionally named. Material so studied, collected chiefly by John W. Gillespie and the writer, is cited in this treatment. I have also been fortunate in receiving recent shipments of Fijian plants from Mr. William Greenwood of Lautoka and Miss Lorna Reay of Nandarivatu, whom I wish to thank for their kind collaboration.

I have been privileged to examine material deposited in several institutions other than the Arnold Arboretum (A), namely the Bernice P. Bishop Museum (Bish), Gray Herbarium (GH), New York Botanical Garden (NY), University of California (UC), U. S. National Herbarium (US), and U. S. National Arboretum [Bureau of Plant Industry] (USNA). For the loan of certain groups from these institutions I am indebted to their respective Directors and Curators. Place of deposit, in the following citations, is indicated by the above parenthetical letters.

Several specialists consented to examine the material of selected families, and some of them have kindly permitted the incorporation of their discoveries in this

[1]See Bishop Mus. Bull. **141**: 1–166. *f. 1–83.* 1936.

paper. The author greatly appreciates the cooperation of the following students: Caroline K. Allen (Lauraceae), Agnes Chase (Gramineae), E. B. Copeland (Pteridophyta), Leon Croizat (Euphorbiaceae), F. R. Fosberg (Ebenaceae, Rubiaceae), Charles Gilly (Sapotaceae), R. A. Howard (Icacinaceae), E. P. Killip (Passifloraceae), C. E. Kobuski (Theaceae, Oleaceae), E. D. Merrill and L. M. Perry (Pandanaceae, Myrtaceae), H. N. Moldenke (Verbenaceae), Hugh O'Neill (Cyperaceae), W. T. Swingle (*Citrus*), L. O. Williams (Orchidaceae), and T. G. Yuncker (*Peperomia, Cuscuta*). Especial thanks are due Dr. E. D. Merrill, for his aid in making preliminary determinations, and Prof. I. W. Bailey, for suggestions concerning certain puzzling specimens. The extensive card-catalogue of Polynesian references compiled by Dr. Merrill, now being kept up to date at the Arnold Arboretum, has been of the greatest value in bibliographic work, as has also his Polynesian Botanical Bibliography, 1773–1935 (Bishop Mus. Bull. **144.** 1937) and its manuscript supplement. The text-figures have been prepared by Mr. Gordon W. Dillon, with the exception of one made by Dr. Howard.

In this treatment only new and unusual plants are discussed, in the hope that further study of the Fijian flora will permit re-description of all the plants known from the archipelago. Ninety-one species, eight varieties, and two forms are described as new; 63 of these entities are based on the collections of Mr. Degener and his assistants (at least as regards the type specimen), while the remaining 38 are based on earlier collections. In addition it has been found necessary to propose 43 new combinations and six new names. An additional 53 species or varieties are reported from Fiji for the first time (at least in strictly botanical literature); of these, 17 are apparently indigenous while 36 are weeds or otherwise introduced plants.

Of particular interest are several families which have not previously been reported from Fiji; these are the Balanopsidaceae and Lobeliaceae (represented by indigeous plants), and the Bromeliaceae, Crassulaceae, Polygalaceae, Bixaceae, Turneraceae, Lythraceae, and Onagraceae (represented by non-indigenous plants). The following genera, containing indigenous species, are first reported from Fiji: *Heliconia, Trilocularia, Pseudomorus, Deeringia, Desmos, Xylopia, Pueraria, Drypetes, Trigonostemon, Citronella, Harpullia, Gonystylus, Pemphis, Dyschoriste,* and *Lobelia.* Non-indigenous species represent the following genera which appear to be otherwise unrecorded from Fiji in botanical literature: *Ananas, Bryophyllum, Chrysobalanus, Schrankia, Polygala, Koelreuteria, Bixa, Turnera, Cuphea, Lawsonia, Clidemia, Jussiaea, Catharanthus, Operculina, Quamoclit, Lantana, Pogostemon, Thunbergia, Coccinea, Mikania, Spilanthes, Synedrella,* and *Youngia.* Doubtless some of the introduced species and genera which I here presume to record as new to Fiji have already been reported from the group. Members of the very active Department of Agriculture in Fiji have long been occupied with a study of weed-control, as indicated by numerous papers in the Agricultural Journal of the Department of Agriculture, Fiji, now in its thirteenth volume. As publications of this sort are often not available to botanical students, I take the liberty of listing certain "new records" which actually are new only to the specialized taxonomic literature.

From the viewpoint of phytogeography, probably the most interesting species discussed in this paper are *Trilocularia vitiensis* (Balanopsidaceae), *Desmos insularis* (Annonaceae), and *Gonystylus punctatus* (Thymeliaceae), which represent substantial extensions of generic ranges. In the Orchidaceae, *Acanthophip-*

*pium vitiense* L. O. Williams (in Am. Orch. Soc. Bull. **10**: 169. 1941), based on the Degener collection, represents a notable generic range-extension. The following genera are revised for the region and keys to the Fijian species proposed: *Elatostema, Procris, Pipturus, Homalium, Phaleria, Medinilla, Astronidium, Couthovia,* and *Hoya.*

Families and genera are discussed in the order established in Dalla Torre and Harms, Genera Siphonogamarum.

## POLYPODIACEAE

By E. B. Copeland

**Tectaria Degeneri** Copeland, sp. nov.

Inter *T. latifoliam* et *T. Godeffroyi;* stipite et rhachibus ebeneis nitidis; lamina ovata, 60 cm. lata, bipinnata, pinnis subopppositis inferioribus pedicellatis; pinnis infimis 45 cm. longis, pinnulis infimis sessilibus, usque ad 20 cm. longis et 2 cm. latis sinuato-lobatis, sequentibus 1–2-paribus adnatis conformibus, pinnis plerisque ad alam 2–10 mm. latam pinnatifidis segmentis linearibus sinuatis, obscuris, tenuiter herbaceis, glabris; venis laxe anastomosantibus cum liberis ramosis vel hamatis inclusis; soris sparsis, dorsalibus, indusio plerumque carente, hic illuc vestigiale fusco.

Viti Levu: Tholo North: Nauwanga, vicinity of Nandarivatu, alt. 750–900 m., *Degener 14478* (GH, Herb. E. B. Copeland, type), Feb. 24, 1941 (in rich forest; native name: *turalo*), *Degener 14873* (GH, Herb. E. B. Copeland) (in dense forest; native name: *turalo;* fronds edible when boiled).

One of the group of *T. latifolia;* more particularly related to *T. Godeffroyi,* and apparently representing a stage in the evolution of the latter species. The pinnules, respectively the segments of pinnatifid pinnae or parts of pinnae, are remarkably slender.

**Tectaria elegans** Copeland, sp. nov.

Adesse videtur pars medialis profunde bipinnatifida frondis; rhachi 3 mm. crassa, brunnea, minutissime velutina; pinnis contiguis, subsessilibus, horizontalibus, 40–45 cm. longis, 10–12 cm. latis, acutis, basi rotundatis, ad alam latam pinnatifidis; segmentis permultis contiguis, ca. 7 cm. longis, 18 mm. latis, acutis, inciso-serratis dentibus 2 mm. longis et latis, herbaceis, glabris; venis areolas perlongas costas secus includentibus, alibi laxe anastomosantibus venulis inclusis nullis; soris ad venas anastomosantes dorsalibus, inferioribus interdum oblongis caeteris permultis orbicularibus, indusiis ferrugineis reniformibus caducis.

Vanua Levu: Thakaundrove: Savuthuru Mt., Savu Savu Bay region, alt. about 300 m., *Degener & Ordonez 15544* (GH, Herb. E. B. Copeland, type), Dec. 1940 or Jan. 1941.

In spite of the relatively well developed reticulation of the veins, the affinity seems to be to *Pleocnemia.*

**Arthropteris Archboldiae** Copeland, sp. nov.

*A. tenellae* affinis, soris indusiatis distincta; rhizomate late scandente, 1 mm. crasso, paleis nigris acutis 0.3–0.5 mm. longis plerisque appressis vestito; pedicellis ca. 2 mm. longis; stipitibus ca. 1 cm. longis inconspicue articulatis; lamina 20–25 cm. longa, deorsum angustata pinnis remotis, rhachi inferne velutina; pinnis sessilibus, superioribus usque ad 4 cm. longis et 8 mm. latis subacutis obscure crenulatis, basi acroscopice obscure auriculatis basiscopice anguste cuneatis, herbaceis, glabris; soris inframedialibus, parvis, indusiis fuscis, reniformibus vel orbiculari-reniformibus.

VITI LEVU: Ra: Southwest of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15514* (GH, Herb. E. B. Copeland, TYPE), June 7, 1941 (climbing smooth-barked trees in dense forest).

*Arthropteris tenella* (Forst.) J. Sm. is a reasonably uniform species in New Zealand, Norfolk Island, and Australia, its rhizomes bearing squarrose, rusty, more ample paleae, and its sori being naked. It has been reported from New Caledonia, but two specimens described below represent an intermediate species, suggestive on the one hand of *A. tenella* and on the other of *A. Archboldiae*.

**Arthropteris neocaledonica** Copeland, sp. nov.

*A. tenellae* affinis, major, paleis nigris acutis appressis, soris nudis e facie superiore pinnae punctiforme expressis.

Rhizome 2 mm. thick; stipe 5 mm. long; lamina 30–40 cm. long; largest pinnae 6 cm. long, 11 mm. wide, medial (not distal), truncate rather than auricled on the upper side at the base.

NEW CALEDONIA: Mt. Koghi, alt. 300 m., *Franc 834* (UC, TYPE [no. *393175*]), *Franc 2001* (UC).

The new species is like *A. tenella* in most respects, but like *A. Archboldiae* in its black paleae, and unlike both in having the position of the sorus well marked on the upper surface.

## PANDANACEAE

By E. D. MERRILL AND L. M. PERRY

**Freycinetia Degeneri** Merr. & Perry, sp. nov.

Scandens; ramulis apicem versus ± 6 cm. crassis, internodiis brevissimis 2–3 mm. longis; foliis 20–25 cm. longis, ± 9 mm. latis, sensim attenuato-acuminatis fere subulatis, margine in parte basilari et apicali media saepissime breviter et inconspicue serrato-denticulatis, costa ultra medium in pagina inferiore remote et minute denticulata, auriculis demum ± solutis deciduis; inflorescentiis terminalibus circiter 5 cm. longis; spathis caducis; pedicellis fere 3 cm. longis parcissime et minute spinuloso-setosis tantum; syncarpiis 3-nis subglobosis, immaturis 1.5 cm. diametro vel 1.5 cm. longis, 1 cm. diametro; baccis numerosis sublinearibus vel sublageniformibus angulatis, in sicco circiter 4–5 mm. longis fere ad basim liberis, apice annulo cinctis; stigmatibus 2–4.

VITI LEVU: Serua: Vatuvilakia, vicinity of Ngaloa, in forest, alt. 0–150 m., *Degener 15128* (A, TYPE), May 1941 (liana; fresh roots pounded and fibers used in binding grass for houses).

This species may be related to *Freycinetia Hombronii* Martelli of Samoa, but it differs in the smaller leaves with deciduous auricles and the practically glabrous pedicels of the syncarps.

**Freycinetia intermedia** Merr. & Perry, sp. nov.

Scandens; ramulis apicem versus 6–10 mm. diametro, internodiis brevibus circiter 5 mm. longis; foliis 30–45 cm. longis, usque 2 cm. latis, sensim attenuato-acuminatis caudatis, cauda 3–3.5 cm. longa, margine in parte basilari et apicali (cauda praecipue) serrato-denticulatis, media saepissime integris, costa in pagina inferiore (basim versus excepta) minute et remote spinuloso-serrata, auriculis demum solutis deciduis; inflorescentiis terminalibus ± 6 cm. longis, spathis caducis, pedicellis glabris; syncarpiis 3-nis immaturis oblongis, 2 cm. longis, ± 1 cm. latis; baccis parte inferiore excepta liberis sublinearibus angulatis, apice annulo levi cinctis; stigmatibus saepissime 3–4.

VITI LEVU: Serua: Mount Ngamo, vicinity of Ngaloa, in forest, alt. 0–150 m., *Degener 15054* (A, TYPE), April 1941 (liana; roots softened and pounded in water and bark removed, then used as string for house-building; native name: *wa me*).

This species is most like *Freycinetia Milnei* Seem. and *F. Pritchardii* Seem. It differs from the first in the shorter and narrower leaves and the smaller syncarp; from the second it may be distinguished by the shape of the berries.

## TRIURIDACEAE

**Andruris vitiensis** (A. C. Sm.) Giesen in Pflanzenr. 104 (IV. **18**): 28. 1938.

*Sciaphila vitiensis* A. C. Sm. in Bishop Mus. Bull. **141**: 15. *f. 5.* 1936.

VANUA LEVU: Thakaundrove: Eastern drainage of Yanawai River, alt. 120 m., *Degener & Ordonez 14077* (GH) (in leaf-mould in dense forest; entire plant purplish red).

This is the second collection of the species (and family) known to me from Fiji, the type having been obtained on Vanua Mbalavu. Mr. William Greenwood writes that he has collected a specimen of the family near Lambasa, on the north coast of Vanua Levu, but this collection is not available to me.

## GRAMINEAE

(determinations by Agnes Chase)

The only modern comprehensive lists of the grasses known from Fiji were published by Summerhayes and Hubbard (in Kew Bull. **1927**: 18–44. 1927; **1930**: 252–265. 1930); 71 species were reported by them. The present collection includes five species which they did not list and which appear to be unrecorded from the group, while five other species were reported by Summerhayes and Hubbard under different names from those in use in the U. S. National Herbarium. In order to record these names in the literature dealing with Fijian plants, the following ten species are listed.

**Microstegium glabratum** (Trin.) A. Camus in Ann. Soc. Linn. Lyon n. s. **68**: 201. 1921.

VITI LEVU: Tholo West: Lumuka, vicinity of Mbelo, near Vatukarasa, alt. 240 m., *Degener 15222* (GH, US) (forming thick patches on sunny moist slopes; native name: *omanuna*); Serua: Waimbale near Namboutini, *Degener 15472* (GH, US) (in sunny wet clearing in forest). VANUA LEVU: Thakaundrove: Uluinabathi Mt., Savu Savu Bay region, alt. 60 m., *Degener & Ordonez 13932* (GH, US) (gregarious on wet sunny slopes).

This species, presumably not uncommon in Fiji, was reported as *Pollinia glabrata* Trin. by Summerhayes and Hubbard (p. 28, 254).

**Andropogon annulatus** Forsk. Fl. Aegypt. Arab. 173. 1775.

VITI LEVU: Rewa: Vicinity of Suva, *Degener & Ordonez 13512* (GH, US) (roadside weed, along shore).

Reported by Summerhayes and Hubbard (p. 29, 255) as *Dichanthium annulatum* (Forsk.) Stapf.

**Andropogon glaber** Roxb. Fl. Ind. **1**: 271. 1820.

VITI LEVU: Tholo North: Korovou, east of Tavua, alt. 60–90 m., *Degener 14960* (GH, US) (on dryish grassy plain; native name: *othangithangi*).

Mentioned by Summerhayes and Hubbard (p. 29, 254) as *Amphilophis glabra* (Roxb.) Stapf.

**Panicum oxyphyllum** Hochst. ex Steud. Syn. Pl. Gram. 65. 1854.

VITI LEVU: Tholo West: Uluvatu, vicinity of Mbelo, near Vatukarasa, alt. 300 m., *Degener 15231* (GH, US) (in forest). VANUA LEVU: Thakaundrove: Between Valanga and Valethi, near sea-level, *Degener & Ordonez 14037* (GH, US) (edge of forest).

In mentioning this species as *Cyrtococcum oxyphyllum* (Hochst.) Stapf, Summerhayes & Hubbard (p. 38, 259) imply that the plants which Seemann (Fl. Vit.

325. 1873) cites as *Panicum trigonum* Retz. belong here. The species is common in Fiji.

**Panicum trigonum** Retz. Obs. Bot. **3**: 9. 1783.

VANUA LEVU: Thakaundrove: Waina, Maravu, near Salt Lake, alt. 15 m., *Degener & Ordonez 14149* (GH, US) (in shrubby pasture).

If Summerhayes and Hubbard are correct in referring Seemann's specimens of *"Panicum trigonum"* to *P. oxyphyllum* Hochst., as mentioned above, it would seem that the true *P. trigonum* is here first recorded from Fiji.

**Panicum reptans** L. Syst. Nat. ed. 10. **2**: 870. 1759.

VITI LEVU: Tholo North: Korovou, east of Tavua, alt. 60 m., *Degener 14959* (GH, US) (on dryish grassy plain).

Reported by Summerhayes and Hubbard (p. 35, 258) as *Urochloa reptans* (L.) Stapf. The name *Panicum reptans* appears in the literature pertaining to Hawaii and Micronesia.

**Oplismenus undulatifolius** (Ard.) R. & S. Syst. Veg. **2**: 482. 1817.

VITI LEVU: Tholo North: Nandarivatu, alt. about 750 m., *Degener 14384* (GH, US) (along forest trail).

Although mentioned from Australasia and other parts of the South Pacific, this species has been unreported from Fiji.

**Setaria geniculata** (Lam.) Beauv. Ess. Agrost. 51. 1812.

VITI LEVU: Rewa: Suva, near sea-level, *Degener & Ordonez 13514* (GH, US) (roadside weed).

Previously reported, in the Pacific, only from Hawaii.

**Aristida aspera** Swallen in Jour. Wash. Acad. Sci. **26**: 177. 1936.

MAKONDRONGA: *Degener & Ordonez 13810* (GH, US) (on dry forested slopes, alt. 60 m.).

The cited collection is of especial interest as representing the second collection of the species; the type is from Rapa.

**Arundo donax** L. Sp. Pl. 81. 1753.

VITI LEVU: Serua: *Degener 15170* (GH, US) (in open forest in rainy region, alt. about 120 m.; plant to 3 m. high; reed used in house-building; native name: *ngasau vavalangi*).

This species has been reported, in the Pacific, only from Hawaii.

## BROMELIACEAE

**Ananas comosus** (L.) Merr. Interpret. Herb. Amb. 133. 1917.

*Ananas sativus* Schult. f. Syst. **7**(*2*): 1283. 1830; Christoph. in Bishop Mus. Bull. **128**: 47. 1935.

VITI LEVU: Tholo West: Uluvatu, vicinity of Mbelo, near Vatukarasa, alt. 300 m., *Degener 15238* (GH) (more or less naturalized in wet forest; native name: *vandra*).

I have not seen any other specimens of the common pineapple, nor of the family, collected in Fiji. Degener reports that the species does not grow in all parts of Viti Levu, but has been known for years in the cited locality. It is probably more common as an escape than the lack of herbarium records implies. Christophersen states that it is commonly found in a natural state in Samoa. The Fijian common name *vandra* is usually referred to *Pandanus tectorius* Sol.

## MUSACEAE

**Heliconia Bihai** L. Mant. **2:** 211. 1771; K. Schum. in Pflanzenr. 1 (IV. **45**): 36. 1900; Christoph. in Bishop Mus. Bull. **128:** 54. 1935.

VITI LEVU: Tholo North: Nauwanga, near Nandarivatu, alt. 750 m., *Degener 14352* (GH) (native name: *paka;* seeds edible when cooked); Naitasiri: Suva Pumping Station, alt. 90 m., *Degener & Ordonez 13988* (GH). VANUA LEVU: Thakaundrove: Savu Savu Bay region, Vatunivuamonde Mt., alt. 300 m., *Degener & Ordonez 14011* (GH). KANDAVU: Hills above Namalata and Ngaloa Bays, alt. 200–400 m., *Smith 193* (NY).

Although it is said to be common in Samoa, New Caledonia, and the Solomons, this widespread species has not previously been recorded from Fiji.

## ZINGIBERACEAE

The conservation of *Alpinia* Roxb. over *Languas* Koenig (Kew Bull. **1940**: 95. 1940) makes necessary a new combination for a Fijian species.

**Alpinia Parksii** (Gillespie) comb. nov.

*Languas Parksii* Gillespie in Bishop Mus. Bull. **91**: 4. *f. 1.* 1932.

VANUA LEVU: Thakaundrove: Savu Savu Bay region, Savuthuru Mt., alt. 90 m., *Degener & Ordonez 13821a* (GH) (herb to 3 m. high, in forest; fruit pale yellow); Vatunivuamonde Mt., alt. 300 m., *Degener & Ordonez 14043* (GH) (coarse herb to 3 m. high, in open forest; corolla white; fruit pale yellow; native name: *lotholotho*); southern slope of Korotini Range, below Navitho Pass, alt. 300–650 m., *Smith 509* (NY) (herb to 2 m. high, on edge of forest; inflorescence 60 cm. long; perianth white; native name: *lotholotho*).

This species has previously been reported only from the type locality on Viti Levu.

**Alpinia purpurata** (Vieill.) K. Schum. in Pflanzenr. 20 (IV. **46**): 323. 1904.

KANDAVU: Namalata Isthmus region, near sea-level, *Smith 8* (GH, NY) (herb, to 2 m. high; bracts bright red; edge of mangrove swamp).

Although this species has been reported from various other Pacific groups, including the Marquesas, Societies, Samoa, Carolines, etc., I believe this to be the first record from Fiji. On Kandavu the species was growing near a village and may have been an escape from cultivation.

## ORCHIDACEAE

By L. O. WILLIAMS

**Habenaria scrotiformis** L. O. Williams, sp. nov.

Herbae terrestres graciles usque ad ca. 6 dm. altae. Folia lineari-elliptica acuta vel acuminata. Sepalum dorsale ovato-lanceolatum obtusum. Sepala lateralia ovalia obliqua obtusa. Petala ovato-lanceolata obliqua. Labellum trilobatum tricallosum carnosum; lobis lateralibus linearibus vel lineari-oblongis, incurvatis, obtusis; lobo medio quam lobis lateralibus breviore, subtriangulari, obtuso; calcare scrotiformi.

Slender terrestrial herbs up to about 6 dm. tall. Leaves when mature 6–16 cm. long and 0.8–1.6 cm. broad, linear-elliptic, acute or acuminate, thin, mostly near the middle of the stem, the leaf-sheaths and cauline bracts amplexicaul. Inflorescence a strict, many-flowered, lax spike up to about 25 cm. long; bracts 3–15 mm. long, lanceolate or linear-lanceolate, acute or acuminate, about as long as or exceeding the ovary. Flowers small for the genus, greenish. Dorsal sepal 2–2.5 mm. long and about 1.25 mm. broad, ovate-lanceolate, obtuse, 1-nerved. Lateral sepals 2–2.5 mm. long and 1–1.5 mm. broad, obliquely oval, obtuse, 1-nerved, the

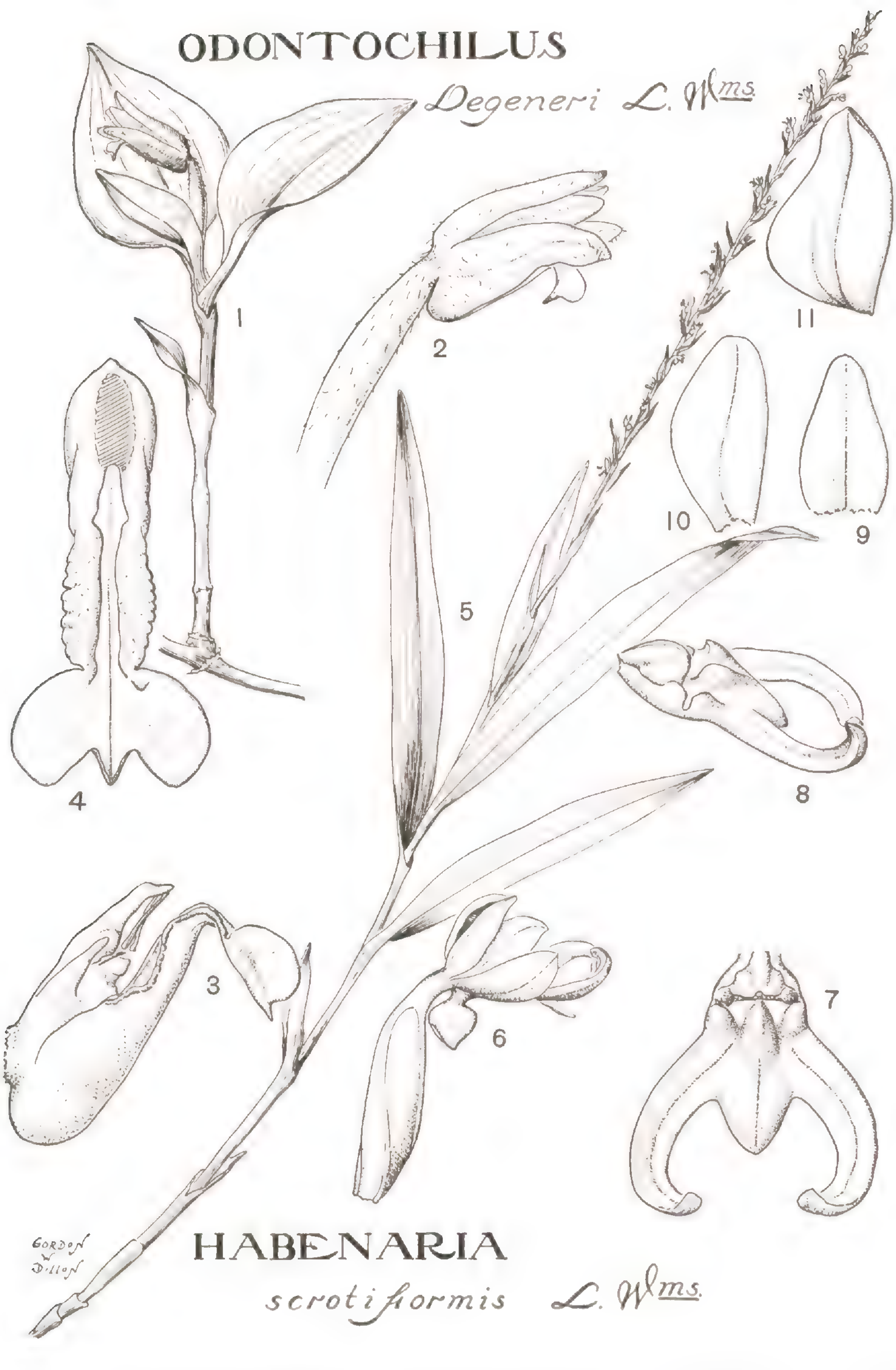


Fig. 1. *1–4. Odontochilus Degeneri; 1.* habit, × 1; *2.* side view of flower, × 2½; *3.* side view of column and lip, × 5; *4.* lip, spread out, × 5. *5–11. Habenaria scrotiformis; 5.* habit, × ½; *6.* side view of flower, × 5; *7.* lip, from above, × 10; *8.* side view of lip, × 10; *9.* dorsal sepal, × 10; *10.* lateral sepal, × 10; *11.* petal, × 10.

base slightly adnate to the lip. Petals 2–2.5 mm. long and 1.5–2 mm. broad, obliquely ovate-lanceolate, obtuse, 2-nerved. Lip about 4 mm. long and about 1.5 mm. broad at base, prominently 3-lobed, with three conspicuous mammillate calluses toward the base, fleshy; lateral lobes linear or linear-oblong, strongly incurved, obtuse; mid-lobe much shorter than the laterals, subtriangular, obtuse; spur about 1.5 mm. long and about 1 mm. in diameter, scrotiform, with a short, small neck.

VANUA LEVU: Thakaundrove: Hills east of Valanga, Savu Savu Bay region, alt. about 100 m., *Degener & Ordonez 13917* (TYPE in Herb. Ames), Dec. 30, 1940 (terrestrial in rich woods).

*Habenaria scrotiformis* is the smallest flowered species of *Habenaria* known to occur in Oceania. It is allied to *H. physoplectra* Reichb. f., from which it is distinguished by the smaller flowers with slightly different lip and petals and by the narrower leaves.

**Odontochilus Degeneri** L. O. Williams, sp. nov.

Herbae parvae terrestres usque ad 12 cm. altae. Folia anguste vel late ovata acuta. Sepalum dorsale oblongo-lanceolatum obtusum leviter pubescens. Sepala lateralia sepalo dorsale conformia sed obliqua. Petala lanceolata obtusa undulata leviter obliqua. Labellum basi saccatum angustum cucullatum, apice reniformi-trilobulatum. Columna generis.

Small terrestrial herbs up to about 12 cm. tall. Stems short, weak, probably from a rhizome, the leaves mostly at or above the middle, the upper node usually pubescent. Leaves 1–3 cm. long and 0.8–2.3 cm. broad, narrowly to broadly ovate, acute, extended into a short semiamplexicaul petiole. Inflorescence a 1-few-flowered raceme; bracts up to about 1 cm. long, lanceolate, acute, glabrous or crisped-pubescent. Dorsal sepal about 10 mm. long and 3 mm. broad, narrowly oblong-lanceolate, obtuse, 1-nerved, sparingly pubescent dorsally. Lateral sepals about 11 mm. long and 3.5 mm. broad, narrowly oblong-lanceolate, 1-nerved, somewhat oblique, sparingly pubescent dorsally. Petals about 10 mm. long and 4 mm. broad, lanceolate, obtuse, undulate, somewhat oblique, 1-nerved. Lip about 10 mm. long and about 5 mm. broad at apex, saccate, the terminal portion broadest, reniform-trilobulate, the basal portion saccate at base, with the connecting part narrow, cucullate, fleshy, rugose, the spur 2–4 mm. long. Column of the genus, about 3 mm. long; anther 3–4 mm. long, surpassing the column. Ovary slightly pubescent.

VITI LEVU: Tholo North: Nauwanga, near Nandarivatu, alt. about 750 m., *Degener 14736* (TYPE in Herb. Ames), March 6, 1941 (terrestrial in swampy forest; perianth pure white).

*Odontochilus Degeneri* seems to be more closely allied to *O. klabatensis* Schltr. from Celebes than it is to the few species of the genus known in the Oceanic Islands. The genera *Odontochilus, Anectochilus* and *Cheirostylis,* all described by Blume, are separated on rather recondite characters, as are some of the other genera of this affinity. It is possible that a generic study of this group will show *Odontochilus* to be the same as *Anectochilus. Odontochilus longiflorus* (Reichb. f.) Benth. & Hook., a Fijian species which I transferred to *Cheirostylis* in 1939, I now believe to be an *Odontochilus.*

**Acanthophippium vitiense** L. O. Williams (in Am. Orch. Soc. Bull. **10**: 169. 1941) and **Liparis orbiculata** L. O. Williams (l. c. 201) were also based on the Degener Fijian collection. The *Acanthophippium* is of especial interest, extending the known range of the genus eastward from New Guinea.

## PIPERACEAE

**Piper Timothianum** sp. nov.

Frutex ad 3 m. altus, ramis ramulisque ad nodos conspicue incrassatis, ramulis apicem versus gracilibus, teretibus brunneo-strigulosis mox glabris; foliis alternatis, petiolis 8–30 mm. longis fere ad apicem vaginantibus (alis inferne ad 2 mm. latis superne ad petiolum attenuatis) primo brunneo-puberulis mox glabris, laminis siccitate papyraceis fusco-olivaceis ovato-ellipticis, 8–17 cm. longis, 6–12 cm. latis, basi aequaliter rotundatis vel truncatis, apice conspicue cuspidatis vel breviter acuminatis (acumine ad 15 mm. longo obtuso), margine integro, utrinque glabris vel subtus ad nervos basim versus inconspicue cinereo-puberulis, (5–) 7–9-nerviis, nervis e basi divergentibus supra leviter elevatis vel subplanis subtus prominentibus, rete venularum sparso subtus interdum prominulo; inflorescentiis ♀ solis visis in axillis foliorum 3 vel 4 (raro 2) aggregatis, pedunculis gracilibus sub anthesi circiter 5 mm. sub fructu ad 35 mm. longis cum rhachi juventute minute brunneo-strigosis mox glabris, spicis crassis demum ad 7 mm. diametro sub anthesi 8–12 mm. sub fructu 14–35 mm. longis; bracteis liberis peltatis stipitatis, stipite brevi obscure glanduloso-strigoso, pelta submembranacea circiter 0.6 mm. diametro mox evanescente; ovario sessili pyriformi-ellipsoideo post anthesin 3–3.5 mm. longo et apicem versus 1.5–2 mm. diametro, apice rotundato vel demum complanato, stigmatibus 3 vel 4 nigrescentibus sessilibus divaricatis circiter 0.2 mm. longis.

Viti Levu: Tholo North: Nandarivatu, alt. 850 m., *Degener & Ordonez 13570* (A, type), Nov. 22, 1940 (spreading shrub about 1.5 m. high, in rain-forest); Nauwanga, near Nandarivatu, alt. about 750 m., *Degener 14360* (A) (shrub 3 m. high, in dense rich forest; fruiting spikes red, suberect), *Degener 14620* (A) (shrub, in dense forest; native name: *yanggoyanggona*); Nandrau, near Nandarivatu, alt. about 600 m., *Degener 14891* (A).

*Piper Timothianum,* a member of the Section *Macropiper* C. DC., appears to be closely related only to the common *P. latifolium* Forst., from which it obviously differs in its fewer nerves, its rounded or truncate rather than conspicuously cordate leaf-bases, and its much shorter fruiting spikes. Several species described by De Candolle were based on material from the vicinity of Nandarivatu, but none of them seems closely related to the new species. *Piper polystachyum* C. DC. is the only one of these which suggests *P. Timothianum,* but it differs in its cordate leaf-blades, numerous nerves, semi-vaginate petioles, more numerous and longer spikes, etc.

The specific name, chosen at Mr. Degener's request, commemorates Timoci Bebe (Timothy Mbembe), a Fijian collector whose assistance was of great value during Mr. Degener's work in Tholo North.

**Piper Degeneri** sp. nov.

Frutex 1 m. altus ubique glaber, ramulis gracilibus teretibus striatis apicem versus 1–2 mm. diametro; stipulis apice ramulorum lanceolatis ad 1 cm. longis; foliis alternatis, petiolis gracilibus 5–10 mm. longis, laminis chartaceis ellipticis, 6–9 cm. longis, 2.5–4.2 cm. latis, basi aequaliter obtusis, apice breviter acuminatis (acumine 5–8 mm. longo obtuso), margine saepe minute recurvatis, pinnatinerviis, costa utrinque paullo elevata, nervis secundariis utrinsecus 2–4 e costa infra medium adscendentibus utrinque prominulis marginem versus inconspicue conjunctis, rete venularum sparso utrinque leviter prominulo; inflorescentiis ♀ solis visis paucis apice ramulorum oppositifoliis, pedunculis gracilibus 2–4 mm. longis siccitate ut videtur nutantibus, spicis crassis (post anthesin 5–7 mm. diametro) 1–1.5 cm. longis, basi et apice rotundatis; bracteis liberis stipitatis, stipite 1.5–2 mm. longo plerumque 3-angulato apicem versus pilis pallidis circiter 0.3 mm. longis obscure strigoso, pelta submembranacea circiter 1 mm. diametro; ovario sessili pyriformi post anthesin (in specimino nostro) ad 3 mm. longo et 1.5–2 mm.

diametro, summo complanato vel centro leviter depresso, stigmatibus 3–5 nigrescentibus sessilibus radiatis circiter 0.2 mm. longis.

VANUA LEVU: Thakaundrove: East of Naunduna, eastern drainage of Yanawai River, alt. 150 m., *Degener & Ordonez 14096* (A, TYPE), Jan. 12, 1941 (shrub 1 m. high, in dense forest; fruiting inflorescence erect, orange, becoming bright red when ripe).

According to the collectors only one plant of this species was seen; they mention that the spikes were erect, but in the dried specimens they appear somewhat reflexed. *Piper Degeneri* is characterized by its small pinnate-nerved leaf-blades and its very short pistillate spikes with short peduncles. A member of the Section *Eupiper* C. DC., the new species is not closely related to *P. insectifugum* C. DC., the only previously known indigenous Fijian member of this section. According to De Candolle's comprehensive key (in Candollea **1**: 67–232. 1923), *P. Degeneri* is most closely allied to *P. corylistachyon* (Miq.) C. DC., a common Philippine species with larger leaves and much longer spikes.

## BALANOPSIDACEAE

**Trilocularia vitiensis** sp. nov.

Arbor ad 10 m. alta ubique glabra, ramulis ut videtur pauciramosis gracilibus juventute viridibus et leviter angulatis demum cinereis et subteretibus; foliis apicem ramulorum versus alternatis, petiolis gracilibus rugulosis 3–12 mm. longis supra canaliculatis, laminis tenuiter coriaceis siccitate olivaceo-viridibus oblongo- vel obovato-ellipticis, 6–12 cm. longis, 2.5–5 cm. latis, basi attenuatis et in petiolum decurrentibus, apice obtusis vel acutis, margine integris saepe undulatis et inconspicue recurvatis, costa supra paullo canaliculata subtus prominente, nervis secundariis utrinsecus 5–8 adscendentibus supra paullo prominulis subtus acute elevatis marginem versus reticulo conjunctis, rete venularum supra subimmerso subtus manifeste prominulo; inflorescentiis ♂ axillaribus vel e ramulis infra vel inter folia orientibus plerumque solitariis, racemosis vel spicatis, stipite inconspicuo incluso 5–13 mm. longis, rhachi gracili (circiter 0.7 mm. diametro) siccitate leviter angulata; floribus 8–15 per inflorescentiam bracteis papyraceis deltoideo-ovatis acutis 1–1.5 mm. longis subtentis, inferioribus pedicellis gracilibus ad 1 mm. longis praeditis, superioribus sessilibus; bracteolis receptaculorum 2 vel 3 membranaceis ovatis acutis 0.5–1 mm. longis et latis, toro inconspicuo; staminibus 3–6, filamentis minutis ad 0.2 mm. longis, antheris oblongo-ellipsoideis, 1.5–2 mm. longis, 1–1.2 mm. latis, basi obscure cordatis, apice minute apiculatis, loculis rimis elongatis lateralibus dehiscentibus; rudimento ovarii nullo; floribus ♀ non visis; fructibus solitariis pedicellatis, pedicellis 12–15 mm. longis superne gradatim incrassatis saepe paullo curvatis; bracteis pedicellorum 6–8 dispersis adpressis chartaceis suborbicularibus, inferioribus circiter 0.5 mm. longis et 1 mm. latis, superioribus ad 2 mm. longis et 3 mm. latis; bracteis involucrantibus circiter 8 imbricatis siccitate subcoriaceis semiorbicularibus vel late ovatis, apice minute cuspidatis vel rotundatis, margine breviter ciliolatis, exterioribus circiter 1.5 mm. longis et 3 mm. latis, interioribus ad 5 mm. longis et 7 mm. latis; fructibus ellipsoideis levibus, 13–15 mm. longis, 9–10 mm. diametro, basi et apice rotundatis, apice stylis plus minusve persistentibus coronatis, pericarpio tenui papyraceo; stylis 3, basi in columnam conspicuam circiter 1.5 mm. diametro connatis, superne liberis et divergentibus, 2–3 mm. longis, fere ad basim bilobatis; seminibus 3 angulatis, dorso convexis, 11–13 mm. longis, circiter 7 mm. latis, testa tenuiter coriacea.

VITI LEVU: Ra: Southwest of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15519* (A) (tree, in forest); Mataimeravula, vicinity of Rewasa, alt. 50–200 m., *Degener 15356* (A, TYPE), May 28, 1941 (tree 10 m. high, in forest; flowers yellow); Tholo North: Vicinity of Nandarivatu, alt. 750–900 m., *Degener 14300* (A) (tree 4 m. high, in open forest along stream; fruit orange); Sovutawambu, near Nandarivatu, alt. 750–900 m., *Degener 14600* (A), (tree, in open forest).

Of the cited collections, numbers *15356* and *15519* bear staminate inflorescences, while *14300* and *14600* are in fruit. This species is one of the most remarkable discoveries of Mr. Degener's recent collection, extending the known range of the Balanopsidaceae from New Caledonia, Queensland, and the New Hebrides to Fiji. It is surprising that the plant has not been obtained by an earlier collector, and one may anticipate finding specimens of it in other parts of herbaria.

Fig. 2. *Trilocularia vitiensis*; *a*. flowering branchlet, × ½; *b*. fruiting branchlet, × ½; *c*. staminate inflorescence, × 2; *d*. staminate flower, × 5; *e*. fruit, × 2.

*Trilocularia vitiensis* is closely related only to *T. pedicellata* Guillaumin, the single species of the family known from the New Hebrides. From this the new species differs in its more open habit, less congested foliage, and its thinner and larger leaf-blades, which are more obviously nerved and have less sharply recurved margins. As the only known collection of *T. pedicellata* is in fruit, no comparison on the basis of staminate inflorescence is possible. The fruit of the New Hebrides plant appears to have a slightly more rugulose and perhaps thicker pericarp than that of *T. vitiensis*.

## MORACEAE

**Pseudomorus Brunoniana** (Endl.) Bur. in Ann. Sci. Nat. V. **11**: 372. 1869; in DC. Prodr. **17**: 249. 1873; Guillaumin in Jour. Arnold Arb. **13**: 96. 1932.

Viti Levu: Lautoka: North of Lomolomo, alt. 120 m., *Degener & Ordonez 13646* (A) (tree 3 m. high, with many leafy subhorizontal branches, in dry forest of ravine in a small jagged range of hills; flowers whitish; leaves thin-coriaceous, dark green); Ra: Mataimeravula, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15419* (A) (on dryish forested forehill; native name: *masimasi,* a name usually referred to *Ficus* spp. and perhaps incorrectly used here); Tholo North: Korovou, east of Tavua, alt. 60–150 m., *Degener 14956* (A) (shrub or small tree 2–3 m. high, in isolated dry forested ravine); Nandala, vicinity of Nandarivatu, alt. 750 m., *Degener 14852* (A) (tree 2–3 m. high, in dark rocky forest below cliffs; trunk 3 cm. diam., with dark bark).

It is surprising that a plant with the above altitudinal range has not been previously recorded from Fiji. One may expect to find it among the earlier collections, and in fact, Mr. William Greenwood, according to an unpublished list which he has kindly made available to me, has already obtained it. From the published records which I can locate, the genus, with its single species, is not known to occur between New Caledonia, the New Hebrides, and Micronesia on one hand and Hawaii on the other. Several varieties and subvarieties have been proposed. Whether or not the Hawaiian material is to be left with the Australasian remains to be seen; as to the present collections, they are doubtless conspecific with the New Hebrides specimens known to Guillaumin and also with the type from Norfolk Island.

## URTICACEAE

### Elatostema J. R. & G. Forst.

Schröter and Winkler (in Rep. Sp. Nov. Beih. **83**(1, 2). 1935, 1936), in their comprehensive and very useful monograph of *Elatostema,* divide the group into four subgenera, *Euelatostema, Pellionia, Elatostematoides,* and *Weddellia.* The first three of these occur in Fiji; the monographic treatment does not include detailed study of *Euelatostema.* Although there are doubtless grounds for C. B. Robinson's separation (in Philip. Jour. Sci. Bot. **5**: 497–501. 1910) of the group into the genera *Elatostema, Pellionia,* and *Elatostematoides,* it seems probable that most students will follow Schröter and Winkler in combining them. This course is followed in the present consideration.

The species of *Elatostema* appear to be very local in distribution. Of the 13 species which I am able to recognize from Fiji, only one, *E. australe* (according to Schröter & Winkl. in Rep. Sp. Nov. Beih. **83**(2): 123. 1936), is found beyond the group. Authentic material of numerous Samoan species has been examined, and when this was not available the descriptions were carefully studied; I conclude that none of the numerous species described from Samoa extend to Fiji. Several of the older species have been widely interpreted and the names of three of them have been recorded in the literature pertaining to Fijian plants.

Gibbs (in Jour. Linn. Soc. Bot. **39**: 171. 1909) lists a specimen from Nandarivatu as representing *E. sessile* J. R. & G. Forst.; this may be either of the species which I describe as *E. palustre* and *E. tenellum,* both of which superficially resemble *E. sessile.* Weddell (in DC. Prodr. **16**(1): 172. 1869) interpreted *E. sessile* very widely. The type collection was from the Society Islands and has been described in a very informative discussion by Setchell (in Univ. Cal. Publ. Bot. **12**: 168. 1926). It has the upper leaf-surface marked with conspicuous linear cystoliths. In the sense of Setchell, *E. sessile* is almost certainly lacking

from Fiji; among the Fijian specimens now available to me, the only one of this relationship is the plant which I describe as *E. palustre,* which differs from *E. sessile* in numerous details of leaf-size, serration, pubescence, etc.

The name *E. macrophyllum* Brongn. has come into the Fijian literature on the basis of a plant collected by Harvey, so determined by Weddell (in DC. Prodr. **16**(1): 174. 1869); that specimen is referable to *E. Seemannianum.* A closer relative of *E. macrophyllum* is described in the present treatment as *E. insulare.* The Fijian specimens often determined as *Pellionia elatostemoides* Gaud. are referable to *E. australe.*

Inflorescence characters are difficult to use in *Elatostema,* except in determining the subgenus. Characters pertaining to the pubescence are highly variable and specific lines cannot be drawn satisfactorily by using them. The leaves show a certain degree of stability in their texture, shape, size, and cystolith-markings, and such characters have been freely used in the following key. Some of the species will admittedly need amplification when more complete material from Fiji is available.

### Key to the Fijian Species

Inflorescences exinvolucrate; perianth-segments of pistillate flowers obvious, subequal to the ovary or achene.
- Perianth-segments not spurred; staminodes present in pistillate flowers; leaf-blades (of Fijian sp.) 11–35 cm. long, (1.5–) 3.5–12.5 cm. broad (§ *Elatostematoides*) ..... 1. *E. australe.*
- Perianth-segments dorsally spurred, those of pistillate flowers sometimes with the spurs reduced to mere thickenings; staminodes usually absent; leaf-blades (of Fijian spp.) not exceeding 10 cm. in length and 3 cm. in breadth (§ *Pellionia*).
  - Leaf-blades elliptic-oblong, 3 or 4 times as long as broad, (1.5–) 3–9 (–10) cm. long, (5–) 8–25 (–30) mm. broad, obtuse to obtusely acuminate at apex, the marginal crenations (4–) 5–15 per side; staminate inflorescence 6–20-flowered, the perianth-segments inconspicuously carinate-spurred ..... 2. *E. vitiense.*
  - Leaf-blades narrowly oblong, 3–5 times as long as broad, 0.6–2.5 (–3) cm. long, 2–8 mm. broad, obtuse at apex, the marginal crenations 3 or 4 per side; staminate inflorescence 2–10-flowered, the perianth-segments conspicuously corniculate ..... 3. *E. Archboldianum.*
  - Leaf-blades linear-lanceolate, about 7 times as long as broad, 4–8 cm. long, 5–11 mm. broad, gradually narrowed to an acuminate apex, the marginal crenations 5–10 per side; staminate inflorescence 2–4-flowered, the perianth-segments conspicuously corniculate ..... 4. *E. comptonioides.*

Inflorescences involucrate; perianth-segments of pistillate flowers inconspicuous, minute, much shorter than the ovary or achene. (§ *Euelatostema*).
- Leaf-blades without cystoliths on the upper surface, hispid on both surfaces, large (20–40 cm. long, 8–16 cm. broad); receptacles large, 8–22 mm. in diameter; bracteoles 4–7 mm. long ..... 5. *E. nemorosum.*
- Leaf-blades with obvious cystoliths on the upper surface.
  - Cystoliths of the upper leaf-surface linear, straight, not branched, rarely slightly angled.
    - Coarse or suffruticose herbs, usually more than 1 m. high, the cystoliths of the upper leaf-surface 0.25–0.5 mm. long.
      - Leaf-blades about twice as long as broad, up to 15 cm. long and 7 cm. broad, the secondary nerves 3–6 per side ..... 6. *E. fruticosum.*
      - Leaf-blades about 3 times as long as broad, (11–) 15–26 cm. long, (3–) 4–9.5 cm. broad, the secondary nerves 8–12 per side ..... 7. *E. insulare.*
    - Low herbs, the stems up to 50 cm. high, often subprostrate toward base, the cystoliths of the upper leaf-surface 0.1–0.3 mm. long.
      - Leaf-blades obovate, 3–6 cm. broad, subsessile, strongly inaequilateral at base, the longer side cordate-subauriculate; receptacles 8–18 mm. in diameter ..... 8. *E. palustre.*
      - Leaf-blades oblong-lanceolate, less than 2 cm. broad, short-petiolate, attenuate at base; receptacles 2–6 mm. in diameter ..... 13. *E. humile.*

Cystoliths of the upper leaf-surface stellate (3–5-parted) or punctiform, sometimes merely angled, rarely straight and linear.
Coarse herbs, at least 50 cm. high; leaf-blades comparatively large, more than 10 cm. long and 3 cm. broad.
Leaf-blades narrowly obovate-oblong, less than 4.5 cm. broad, 4 or 5 times as long as broad; staminate receptacles 4–5 mm. in diameter .....9. *E. Gillespiei.*
Leaf-blades usually more than 4.5 cm. broad, about 3 times as long as broad; staminate receptacles more than 5 mm. in diameter.
Staminate receptacles 10–35 mm. in diameter; leaf-blades large, (15–) 18–40 cm. long, 6–15 cm. broad, usually subentire toward base ..10. *E. Seemannianum.*
Staminate receptacles 5–9 mm. in diameter; leaf-blades smaller, 10–18 cm. long, (3.5–) 4.5–7 cm. broad, conspicuously serrate at the entire margin
11. *E. eximium.*
Low herbs, up to 50 cm. high, the stem often subprostrate toward base; leaf-blades comparatively small, up to 9.5 cm. long and 2.7 cm. broad.
Leaf-blades 20–27 mm. broad, about 3 times as long as broad, subsessile, often subauriculate on one side at base .....12. *E. tenellum.*
Leaf-blades 8–18 mm. broad, 4 or 5 times as long as broad, short-petiolate, attenuate at base .....13. *E. humile.*

1. **Elatostema** (§ *Elatostematoides*) **australe** (Wedd.) Hall. f. in Ann. Jard. Bot. Buitenz. **13**: 316. 1896; Schröter & Winkl. in Rep. Sp. Nov. Beih. **83**(*2*): 122. *pl. 33.* 1936.

*Pellionia elatostemoides* sensu Seem. Fl. Vit. 239. 1868; Gibbs in Jour. Linn. Soc. Bot. **39**: 171, 1909; non Gaud.

*Pellionia australis* Wedd. in DC. Prodr. **16**(1): 169. 1869; Seem. Fl. Vit. 432. 1873.

*Pellionia elatostemoides* var. *pubescens* Turrill in Jour. Linn. Soc. Bot. **43**: 39. 1915.

*Elatostema australe,* the only Fijian representative of the subgenus *Elatostematoides,* appears to be the most abundant Fijian *Elatostema.* The type, collected on Ovalau by Vieillard, has the nerves pilose on the lower leaf-surface, as do many of the available specimens. Other specimens, however, have the leaves completely glabrous, and since there is no definite line between these extremes, I doubt if they are worthy of nomenclatural recognition. Some specimens, as e.g. *Smith 83,* have both glabrous and pilose leaves on the same individual. The range of leaf-size is considerable, the length varying from 11–35 cm. and the breadth from (rarely 1.5–) 3.5–12.5 cm. Schröter and Winkler do not account for Turrill's varietal combination, although they cite *im Thurn 286,* the type collection, without comment as *E. australe.* In citing the Fijian material available to me, I arrange it in (1) plants with the lower leaf-surface pilose, at least on the principal nerves, and (2) plants with the leaves completely glabrous.

(1). VITI LEVU: Ra: Vicinity of Rewasa, near Vaileka, *Degener 15434* (A); Tholo East: Wainimala River below Matawailevu, *St. John 18256* (A, Bish); Namosi: *Horne 817* (GH); near Namosi, *Gillespie 2522* (A, Bish); Naitasiri: Viria, *Parks 20422* (A, Bish), *Meebold 16662* (Bish). OVALAU: *U. S. Expl. Exped.* (GH, US) (narrow-leaved form). KANDAVU: Hills above Namalata and Ngaloa Bays, *Smith 83* (Bish, GH, NY, UC, US) (leaves sometimes glabrous). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (GH, US), *Gillespie 2486* (Bish), *2568* (Bish), *2617* (A, Bish).

(2). VITI LEVU: Tholo North: Vicinity of Nandarivatu, *Degener 14839* (A); Tholo West: Vicinity of Mbelo, near Vatukarasa, *Degener 15230* (A); Waimbale, near Namboutini, *Degener 15483* (A); Mbuyombuyo, near Namboutini, *Tabulewa 15575* (A); Namosi: *Gillespie 2683* (A, Bish); near Namosi, *Gillespie 2686* (Bish); Voma Mt., *Gillespie 2673* (A, Bish). KANDAVU: Mt. Mbuke Levu, *Smith 227* (Bish, GH, NY, UC, US), *280* (Bish, GH, NY, UC, US). VANUA LEVU: Thakaundrove: Savu Savu Bay region, *Degener & Ordonez 13864* (A) (narrow-leaved form). TAVEUNI: Near Waiyevo, *Gillespie 4706* (A, Bish). WITHOUT DEFINITE LOCALITY: *Seemann 429* (GH), *Gillespie 2701* (A, Bish).

The cited specimens, occurring in forest from near sea-level to about 800 m., are reported as shrubs or coarse herbs up to 2 m. high; common native names are

*ndraindrai* and *mbeta*. The cited U. S. Exploring Expedition sheets are determined in Gray's hand as *Pellionia vitiensis* n. sp., a broad-leaved and a narrow-leaved form being indicated, but these sheets are not to be taken as typifying that species. In describing *Pellionia vitiensis,* Weddell, although he accredited the species to Gray, cited only a Harvey collection, which thus becomes the type. Gray's concept of that species, as represented by the Exploring Expedition sheets, has no nomenclatural status.

2. **Elatostema** (§ *Pellionia*) **vitiense** (Wedd.) comb. nov.
*Pellionia vitiensis* A. Gray ex Wedd. in DC. Prodr. **16**(1): 167. 1869.
*Elatostema filicoides* var. *vitiense* Schröter in Rep. Sp. Nov. Beih. **83**(2): 60. 1936.

VITI LEVU: Tholo North: *Gillespie,* Nov. 17, 1927 (A, Bish); Nandarivatu, alt. 850 m., *Degener & Ordonez 13560* (A) (subprostrate herb, woody at base, in wet forest; small-leaved form); Tholo West: Mbulu, near Sovi Bay, alt. about 30 m., *Degener 15033* (A) (low shrub to 1 m. high, in wet forest); Yawe, vicinity of Mbelo, near Vatukarasa, alt. 300 m., *Degener 15288* (A) (shrub 1 m. high, in wet forest; small-leaved form with hispid branchlets); Namosi: Vicinity of Namosi, alt. 600 m., *Parks 20212* (Bish) (subligneous herb, in wet forest); Naitasiri: Suva Pumping Station, alt. 30 m., *Degener & Ordonez 13754* (A) (subligneous herb, in forest). KANDAVU: Mt. Mbuke Levu, alt. 200–500 m., *Smith 245* (Bish, GH, NY, UC, US) (shrub 1–2 m. high, in dense forest; inflorescences white; form with small crowded leaves). VANUA LEVU: Thakaundrove: Vicinity of Maravu, near Salt Lake, alt. about 300 m., *Degener & Ordonez 14176* (A) (low shrub, in dark forest); southern slope of Valanga Range, alt. 200–400 m., *Smith 374* (Bish, GH, NY, UC, US) (subligneous herb, in densely forested valley; inflorescence white to pink).

The type of this species was collected by Harvey; the several Exploring Expedition sheets marked in Gray's writing *Pellionia vitiensis* sp. nov. have been discussed under *Elatostema australe*. In view of the fact that Gray had nothing to do with Weddell's description of *Pellionia vitiensis* and even had a different concept in mind for this name, it seems advisable to drop his name from the authorship of the species.

As between this species and the next, I follow Schröter and Winkler in supposing that Harvey's type collection of *Pellionia vitiensis* represents the larger-leaved group. The dimensions of the leaves given by Weddell can fit either species, but he mentions the marginal crenations as 4–6 per side, which would seem to exclude the following species as I interpret it. Schröter and Winkler remark that the Harvey specimen is "schwächliche," referring it to their larger-leaved variety with a question. Furthermore, Harvey collected only at low elevations, and the smaller-leaved species is very probably limited to the mountainous parts of Fiji.

The line between *E. vitiense* and *E. australe* is not clear; on the whole the leaves of the latter are much larger, while the perianth-segments are not spurred and staminodes are apparently always present in pistillate flowers. In the former, the perianth-segments are spurred, but pistillate flowers have the spurs very inconspicuous, often reduced to mere median distal thickenings or occasionally entirely lacking, while staminodes are occasionally found in pistillate flowers. Sometimes, as in *Degener 15033* and *Degener & Ordonez 14176,* staminodes are quite common, some flowers in a head having from one to five, while other flowers lack them. Thus, while the subgenera *Pellionia* and *Elatostematoides* are usually quite separable, we have a case where the line between them breaks down. I believe that the two species may be recognized for convenience; the intermediate forms may be the result of hybridization or they may indicate that the differentiation of a polymorphic species is incomplete.

3. **Elatostema** (§ *Pellionia*) **Archboldianum** sp. nov.

Frutex parvus multiramosus, ramulis gracilibus teretibus glabris vel apicem versus minute et pallide strigosis; stipulis persistentibus binis papyraceis vel submembranaceis brunneis, oblongo-subulatis, 2–5 mm. longis, acuminatis; foliis alternatis, laminis sessilibus (vel petiolis gracilibus ad 0.5 mm. longis) chartaceis anguste oblongis, 6–25 (–30) mm. longis, 2–8 mm. latis, basi inaequilateraliter obtusis vel rotundatis, apice obtusis, margine conspicue crenatis (dentibus obtusis utrinsecus 3 vel 4), supra minute scrobiculatis vel levibus, subtus saepe disperso-brunneo-glandulosis, utrinque cystolithis inconspicuis 0.3–0.6 mm. longis laxe ornatis, costa supra subplana subtus elevata et saepe strigosa, nervis lateralibus utrinsecus 3–7 brevibus obscuris; inflorescentiis ♂ solis visis in nodis solitariis compactis pauciramulosis, pedunculo gracili 2–10 mm. longo glabro vel parce strigoso, floribus 2–10 per inflorescentiam; bracteis membranaceis oblongis acutis, circiter 1.3 mm. longis et 0.6 mm. latis, glabris vel extus paullo strigosis, bracteolis similibus sed minoribus; pedicellis gracilibus sub anthesi 0.3–1.6 mm. longis substrigosis; perianthii segmentis 5 membranaceis elliptico-oblongis, 1.2–2 mm. longis, 0.7–1.6 mm. latis, extus strigoso-puberulis et sub apice calcare conspicuo 0.5–0.7 mm. longo corniculatis; staminibus 5, filamentis gracilibus 1–1.6 mm. longis, antheris oblongis 0.6–1 mm. longis, loculis inferne conspicue divergentibus.

Viti Levu: *Gillespie 2608* (Bish) (native name: *lara*), *3717* (A, Bish); Tholo North: Mt. Matomba, vicinity of Nandarivatu, alt. 750 m., *Degener 14429* (A, TYPE), Feb. 18, 1941 (low shrub, in dense forest); vicinity of Nandarivatu, alt. 750–900 m., *Degener & Ordonez 13559* (A) (erect low shrub less than 1 m. high, in dense wet forest), *Degener 14328* (A) (low shrub, in dark wet forest; flowers white); summit of Mt. Loma Langa, alt. 1200 m., *Gillespie 3912.5* (Bish). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (GH), *Gillespie*, Nov. 12, 1927 (Bish).

The new species probably represents the concept which Schröter and Winkler referred to *E. filicoides* var. *eufilicoides*, a name which, as discussed following my treatment of *Elatostema*, must be excluded from the genus.

*Elatostema Archboldianum* and *E. vitiense*, as represented by the cited specimens, appear specifically distinct on the basis of the much smaller leaves and more compact staminate inflorescences of the former. Floral differences are scarcely apparent, except for a slight tendency toward more conspicuous spurs on the staminate perianth-segments in *E. Archboldianum*. Doubtless intermediate forms between the two extremes exist, so that the course selected by Schröter and Winkler—of referring them to two varieties of one species—is perhaps justified. However, if this is done, one can hardly fail to include *E. australe* in the same species, since the differences between that species and *E. vitiense* are no greater than those between *E. vitiense* and *E. Archboldianum*. If all are combined, the resultant species will be entirely unwieldy, including plants with leaves varying from 0.6 to 35 cm. in length. In short, in this section of *Elatostema* one must admit that specific lines are arbitrary; those here suggested for the Fijian species are not sharp, but they seem to serve on the basis of present material.

4. **Elatostema** (§ *Pellionia*) **comptonioides** sp. nov.

Frutex gracilis 0.5–2 m. altus, ramulis subteretibus vel apicem versus leviter sulcatis dense strigoso-puberulis demum glabratis; stipulis persistentibus binis papyraceis castaneis subulato-lanceolatis, 4–9 mm. longis, glabris vel dorso obscure strigosis; foliis apicem ramulorum versus confertis alternatis, petiolis submullis vel ad 1 mm. longis et breviter strigosis, laminis chartaceis lineari-lanceolatis, 4–8 cm. longis, 5–11 mm. latis, basi inaequilateraliter obtusis vel rotundatis, apicem versus gradatim angustatis et apice obtuse acuminatis, margine profunde crenatis (dentibus utrinsecus 5–10), utrinque cystolithis 0.25–0.4 mm. longis conspicue ornatis, costa supra subplana subtus elevata et pallido-strigosa, nervis lateralibus

numerosis brevibus obscuris interdum strigosis; inflorescentiis ♂ solis visis paucis in nodis solitariis subcapitatis, pedunculo gracili 6–12 mm. longo parce strigoso, floribus 2–4 per inflorescentiam subsessilibus; bracteis membranaceis acutis oblongis, 1.3–1.8 mm. longis, circiter 0.5 mm. latis, glabris vel extus parce strigosis, bracteolis similibus sed minoribus; perianthii segmentis 5 membranaceis elliptico-oblongis, circiter 1.3 mm. longis et 1 mm. latis, extus parce strigosis, apice obtusis, dorso apicem versus calcare conspicuo 0.5–0.8 mm. longo corniculatis; staminibus 5, filamentis gracilibus circiter 1 mm. longis, antheris oblongis circiter 0.8 mm. longis, loculis inferne conspicue divergentibus.

VANUA LEVU: Thakaundrove: Natewa Peninsula, Uluingala, alt. 600–820 m., *Smith 1977* (Bish, GH, TYPE, NY, UC, US), June 15, 1934 (shrub 0.5–2 m. high, in dense forest; inflorescence white).

*Elatostema comptonioides* seems amply distinguished from its relatives in § *Pellionia* by the foliage-characters mentioned in the key. The leaves of the new species bear a remarkable superficial similarity to those of *Comptonia peregrina* (L.) Coult.

5. **Elatostema** (§ *Euelatostema*) **nemorosum** Seem. Fl. Vit. 240. *pl. 61.* 1868.

Coarse herb up to 2 m. high, the stem simple, sparsely hispid, glabrescent; leaves alternate, subsessile, the blades papyraceous, brownish when dried, slightly paler beneath, subfalcate-obovate, 20–40 cm. long, (6–) 8–16 cm. broad, gradually narrowed toward base and strongly inequilateral (one side attenuate, the other cordate-subauriculate), abruptly short-acuminate at apex, coarsely serrate at margin (teeth 2–4 per centimeter, subacute, 2–5 mm. long), minutely scrobiculate and hispid above with pale hairs 1–2 mm. long, more densely hispid or crispate-hispid beneath (especially on nerves) with slightly shorter hairs, the cystoliths none on either surface, the costa stout, slightly raised above and subprominent beneath, the secondary nerves 10–17 per side, erecto-patent, subplane or slightly raised above, elevated beneath, the veinlet-reticulation immersed above, slightly prominulous beneath; stipules papyraceous or submembranous, oblong-linear, 2–5 cm. long, dorsally short-hispid; staminate receptacles 17–22 mm. in diameter, on slender hispidulous or glabrescent peduncles up to 1 cm. long, the outer bracts chartaceous, subreniform, up to 14 mm. long and 24 mm. broad, sericeo-hispidulous, glabrescent, carinate or obscurely corniculate dorsally toward apex, the inner bracts similar but smaller; bracteoles membranous, oblong-obovate, 5–7 mm. long, 2–4 mm. broad, obscurely hispidulous distally without; pedicels slender, to 1 mm. long; perianth-segments 4, membranous, lanceolate, 1–1.6 mm. long, acute and sparsely hispid-ciliate at apex; anthers about 0.4 mm. long; pistillate receptacles pedunculate like the staminate, 8–20 mm. in diameter, the outer bracts usually several, connate at base, oblong, 5–7 mm. long, carinate dorsally and acute at apex, sparsely hispidulous, the inner bracts gradually smaller; bracteoles membranous, linear 4–6 mm. long, 0.4–1 mm. broad, distally hispidulous; pedicels to 4 mm. long; perianth-segments inconspicuous, the achene ovoid, about 1 mm. long.

VITI LEVU: Tholo North: Nandarivatu, alt. 1200 m., *Parks 20788* (A, Bish) (coarse herb 1 m. high, in wet canyons); Nandrau, near Nandarivatu, alt. 600 m., *Degener 14887* (A) (native name: *mbeta*); Namosi: Namosi, alt. 600–900 m., *Parks 20273* (A, Bish) (herb, more than 1 m. high, in dense wet forest). VANUA LEVU: Thakaundrove: Mt. Mariko, alt. 600–866 m., *Smith 464* (Bish, NY, US) (coarse herb 2 m. high, in dense forest; heads greenish). TAVEUNI: *Seemann 422* (GH, TYPE COLL.); trail from Somosomo, alt. 950 m., *Gillespie 4824* (A, Bish) (in dark wet canyon).

As represented by the cited specimens, *E. nemorosum,* which is apparently limited to higher elevations, is a very well-marked and easily recognized species. Probably the following specimen also belongs here: *Meebold 16661* (Bish), from

Mt. Korombamba, Naitasiri, Viti Levu. However, this specimen has slightly smaller leaves than those above described, the stiff hairs of the upper surface are few or lacking, the hairs of the nerves beneath are subappressed rather than spreading, short linear cystoliths are often visible on the lower surface, and the bracts and bractoles of staminate heads are minutely glandular. In view of the variation which is evident in many species of *Elatostema,* I doubt if these characters denote a departure of nomenclatural value, but further material is desirable.

6. **Elatostema** (§ *Euelatostema*) **fruticosum** Gibbs in Jour. Linn. Soc. Bot. **39:** 171. *pl. 16.* 1909.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 800–1200 m., *Degener & Ordonez 13522* (A) (coarse subligneous herb about 2 m. high, in dark wet forest; stems succulent; leaves dark green; inflorescence whitish), *Parks 20543* (A, Bish) (herb 50 cm. high, in forest).

The cited specimens, from the type locality, agree excellently with the original description and plate. Our specimens have the leaf-blades up to 15 cm. long and 7 cm. broad and the secondary nerves are often 5 or 6 per side. The species is only remotely related to *E. sessile* Forst.

7. **Elatostema** (§ *Euelatostema*) **insulare** sp. nov.

Herba ad 2 m. alta pauciramosa, ramulis substrigosis vel glabris; foliis alternatis, petiolis strigosis vel glabris 1–10 mm. longis, laminis papyraceis siccitate fusco-viridibus vel olivaceis, subtus pallidioribus, inaequilateraliter elliptico-oblongis, (11–) 15–26 cm. longis, (3–) 4–9.5 cm. latis, basi subacutis vel latere breviore obtusis, apice gradatim caudato-acuminatis, margine dentibus 1 vel 2 per centimetrum grosse crenatis vel undulatis, supra cystolithis linearibus 0.25–0.5 mm. longis conspicue ornatis et glabris vel pilis pallidis circiter 1 mm. longis parce strigosis, subtus pilis 0.5–1 mm. longis praecipue ad nervos hispido-strigosis vel glabris et interdum cystolithis (nervis solis) ornatis, pinnatinerviis, costa supra leviter elevata subtus prominente, nervis lateralibus utrinsecus 8–12 adscendentibus supra paullo subtus conspicue elevatis, venulis obscuris vel subtus prominulis; stipulis papyraceis vel membranaceis lineari-oblongis 1.5–4 cm. longis dorso strigosis caducis; receptaculis subsessilibus vel breviter pedunculatis, pedunculis ad 5 mm. longis puberulis glabratis; receptaculis ♂ 6–22 mm. diametro, bracteis exterioribus saepe subcarnosis in pelta suborbiculari connatis, extus minute strigosis vel glabris et interdum parce brunneo-glandulosis, apicem versus inconspicue carinato-corniculatis, bracteis interioribus papyraceis vel submembranaceis minoribus; bracteolis membranaceis oblongo-spathulatis, 3–4 mm. longis, 1.5–2 mm. latis, apicem versus obscure pilosis; pedicellis ad 1 mm. longis, perianthii segmentis 4 circiter 1 mm. longis, antheris oblongis circiter 0.8 mm. longis; receptaculis ♀ 7–8 mm. diametro, bracteis numerosis papyraceis anguste oblongis, 4–5 mm. longis, basi connatis, dorso strigosis, apice carinato-corniculatis, interioribus angustioribus; bracteolis 2–3 mm. longis et 0.4–0.7 mm. latis, apicem versus strigosis, saepe obscure corniculatis; pedicellis ad 1 mm. longis, perianthii segmentis minutis, achenio anguste ellipsoideo circiter 0.5 mm. longo.

KORO: Eastern slope of main ridge, alt. 300–500 m., *Smith 1064* (Bish, NY) (herb to 1 m. high, in forest). KANDAVU: Mt. Mbuke Levu, alt. 200–500 m., *Smith 238* (Bish, GH, NY, UC, US) (coarse herb 1–2 m. high, in dense forest; heads whitish). VANUA LEVU: Thakaundrove: Vatunivuamonde Mt., Savu Savu Bay region, alt. 250 m., *Degener & Ordonez 14004* (A) (subligneous herb, in dark forest). TAVEUNI: Vicinity of Waiyevo, alt. 400 m., *Gillespie 4727* (A, TYPE, Bish), Feb. 27, 1928 (in dark wet stream bed in woods above coconut plantations).

A represented by the four cited collections, the species shows some variation, but I believe that the material is conspecific. The lower leaf-surface is usually strigose, but *Smith 238* has the leaves quite glabrous; the margin is generally

crenate, but the Gillespie specimen has the crenations very inconspicuous. Pistillate inflorescences are found on *Degener & Ordonez 14004,* the others bearing staminate heads.

The new species is suggestive of *E. macrophyllum* Brongn. (Bot. Voy. Coquille 207. *pl. 45.* 1834), based on a specimen from Amboina. Our plant differs from that, however, in its longer cystoliths, which are practically lacking from the lower leaf-surfaces, and in details of its staminate inflorescence, such as the perianth-segments being obtuse rather than acuminate at apex. A closer relative of *E. insulare* is *E. fruticosum,* which differs from it as noted in the key.

8. **Elatostema** (§ *Euelatostema*) **palustre** sp. nov.

Herba ad 50 cm. alta, caule inferne subprostrato superne suberecto ut videtur succulento glabro; foliis alternatis, laminis subsessilibus tenuiter papyraceis siccitate viridibus inaequilateraliter obovatis, 8–16 cm. longis, 3–6 cm. latis, basim versus gradatim angustatis et valde inaequilateralibus (uno latere attenuatis, altero cordato-subauriculatis), apice acutis vel breviter acuminatis, margine dentibus subacutis 3–5 mm. longis 2 vel 3 per centimetrum grosse serratis, utrinque cystolithis linearibus 0.15–0.2 mm. longis inconspicue ornatis, supra pilis pallidis 1–2 mm. longis et subtus pilis paullo minoribus praecipue ad nervos hispidis, pinnatinerviis, costa supra subplana subtus prominente, nervis lateralibus utrinsecus 7–9 adscendentibus supra planis subtus leviter elevatis, rete venularum subtus paullo prominulo; stipulis membranaceis anguste ellipticis 1.5–2 mm. longis dorso hispido-strigosis; receptaculorum pedunculis gracilibus 4–13 mm. longis obscure strigosis glabratis; receptaculis ♂ 10–18 mm. diametro, bracteis exterioribus papyraceis reniformibus, circiter 7 mm. longis et 12 mm. latis, extus pallido-strigillosis et cystolithis linearibus minutis circiter 0.1 mm. longis copiose ornatis, apicem versus breviter carinato-corniculatis, bracteis interioribus similibus sed minoribus; bracteolis membranaceis obovato-oblongis, 2.5–4 mm. longis, 1–2 mm. latis, dorso parce strigosis; pedicellis ad 1 mm. longis, perianthii segmentis 4 acutis 1.5–2 mm. longis, antheris oblongis circiter 1.5 mm. longis; receptaculis ♀ 8–10 mm. diametro, bracteis submembranaceis numerosis deltoideo-oblongis, circiter 5 mm. longis, basi connatis, margine hispido-ciliatis, dorso apicem versus carinato-corniculatis, exterioribus 3–4 mm. latis, interioribus angustioribus; bracteolis lineari-spathulatis, 2.5–3 mm. longis, 0.2–0.5 mm. latis, apicem versus strigosis; pedicellis ad 2 mm. longis, perianthii segmentis minutis, achenio anguste ellipsoideo circiter 0.8 mm. longo.

Viti Levu: Tholo East: Central plateau between Wainimala and Singatoka Rivers, Wainisavulevu-Numbololo divide, Taunaisali, alt. 1150 m., *St. John 18337* (A, type, Bish), Aug. 18, 1937 (in swampy rain-forest; native name: *mbeta*).

The new species is of the relationship of the Samoan *E. cuprco-viride* Rechinger, from which it differs in its much larger stipules, its larger and proportionately narrower leaf-blades with narrower base and more numerous serrations, and its hispid rather than appressed-pilose nerves of the lower leaf-surface.

9. **Elatostema** (§ *Euelatostema*) **Gillespiei** sp. nov.

Herba succulenta vel basim versus forsan sublignosa, caule gracili glabro conspicue nodoso; foliis alternatis, petiolis leviter canaliculatis 2–7 mm. longis glabris, laminis papyraceis siccitate flavo-viridibus utrinque glabris anguste et leviter inaequilateraliter obovato-oblongis, 14–20 cm. longis, 3–4.5 cm. latis, basi gradatim angustatis et acutis vel latere breviore obtusis, apice conspicue caudato-acuminatis, margine inferne integris superne inconspicue undulato-crenatis (dentibus 1 vel 2 per centimetrum), utrinque cystolithis stellatis 3–5-ramulosis circiter 0.15 mm. diametro densissime papillosis, pinnatinerviis, costa supra leviter elevata subtus prominente, nervis lateralibus utrinsecus 7–11 valde adscendentibus supra planis

subtus elevatis, rete venularum supra immerso subtus plano; stipulis papyraceis glabris lineari-oblongis 2–2.5 cm. longis; receptaculis breviter pedunculatis, pedunculo 1–3 mm. longo glabro; receptaculis ♂ 4–5 mm. diametro, bracteis exterioribus subcoriaceis connatis, extus strigoso-puberulis glabratis, apicem versus carinato-corniculatis, bracteis interioribus papyraceis minoribus; bracteolis membranaceis obovatis, 2–3 mm. longis, 1–1.5 mm. latis, apicem versus puberulis; pedicellis ad 0.5 mm. longis, perianthii segmentis 4 circiter 0.8 mm. longis, antheris oblongis minutis; receptaculis ♀ 6–8 mm. diametro, bracteis numerosis papyraceis 3–4 mm. longis glabratis, basi connatis, apicem versus obscure carinatis; bracteolis lineari-obovatis, circiter 2 mm. longis, 0.3–0.6 mm. latis, apicem versus hispidulis; pedicellis ad 0.7 mm. longis, perianthii segmentis 4 lanceolatis minutis, stylis circiter 1 mm. longis, achenio obovoideo-ellipsoideo ad 1 mm. longo.

VITI LEVU: Naitasiri: Korombamba Mt., near summit, alt. 500 m., *Gillespie 2402* (A, TYPE, Bish), Aug. 24, 1927.

*Elatostema Gillespiei* is clearly related to *E. Seemannianum,* which it resembles in leaf-texture and cystolith-marking, but from which it differs in its much narrower leaf-blades with sharply ascending veins and in its substantially smaller inflorescences. Another collection which is probably referable to *E. Gillespiei* is *Parks 20055* (A, Bish), from Lami, alt. 100 m., near Suva, Rewa, Viti Levu. This specimen differs from the type only in its smaller leaf-blades (7–14 cm. long, 2–4 cm. broad), which are more obviously crenate at margins and hispid on the nerves beneath, and in its more obviously pubescent staminate heads. Characters of pubescence and leaf-margins are of such dubious value in *Elatostema* that I believe the Parks plant may be safely referred here.

10. **Elatostema** (§ *Euelatostema*) **Seemannianum** A. C. Sm. in Bishop Mus. Bull. **141**: 58. *f. 27.* 1936.

*Elatostema macrophyllum* sensu Seem. Fl. Vit. 241, excl. syn. 1868; Gibbs in Jour. Linn. Soc. Bot. **39**: 172. 1909; non Brongn.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 600–925 m., *Gillespie 4256* (A, Bish) (on banks of small stream), *Degener & Ordonez 13600* (A) (coarse herb less than 1 m. high, in forest; staminate heads whitish), *Degener 14923* (A) (in forest; native name: *mbeta*); Tholo West: Waimbale, near Namboutini, *Degener 15470* (A) (coarse herb, on partly forested slope; native name: *mbeta*); Naitasiri: Viria, *Meebold 16431* (Bish). OVALAU: *U. S. Expl. Exped.* (GH, US), *Bryan 610* (Bish) (succulent herb to 2 m. high, on stream-bank in rain-forest at 150 m. alt.; receptacle green; staminate flowers white). KORO: Eastern slope of main ridge, alt. 300–500 m., *Smith 982* (Bish, TYPE, NY) (herb to 2 m. high, in forest; anthers white). WITHOUT DEFINITE LOCALITY: *Harvey* (GH).

This well-marked species has large leaf-blades which remain yellowish green when dried and which appear to have the upper surfaces closely papillose. Closer observation shows that the punctiform papillae are minute stellate 3–5-branched cystoliths. The species is not a close relative of *E. macrophyllum* Brongn.

11. **Elatostema** (§ *Euelatostema*) **eximium** sp. nov.

Herba succulenta ut videtur ad 50 cm. alta, caule fusco apicem versus dense brunneo-strigoso demum glabrato; foliis alternatis, petiolis subnullis vel ad 4 mm. longis ut caule strigosis, laminis papyraceis siccitate fusco- vel flavo-viridibus inaequilateraliter obovatis, 10–18 cm. longis, 3.5–7 cm. latis, basi gradatim angustatis et acutis vel latere longiore obtusis, apice abrupte et gracile acuminatis, margine omnino dentibus subacutis 2 vel 3 per centimetrum conspicue serratis, utrinque cystolithis stellatis 3- vel 4-ramulosis 0.13–0.3 mm. diametro (raro tantummodo angulatis) manifeste ornatis, supra glabris vel pilis paucis ad 1 mm. longis disperse strigosis, subtus ad nervos dense strigosis, pinnatinerviis, costa supra subplana subtus prominente, nervis lateralibus utrinsecus 8–12 arcuato-adscendentibus supra planis subtus elevatis, venulis immersis vel subtus prominulis; stipulis papy-

raceis bicarinatis dorso hispidulis glabratis lineari-oblongis 1.5–3 cm. longis; receptaculis ♂ solis visis 5–9 mm. diametro subsessilibus vel breviter pedunculatis, pedunculo crasso ad 2 mm. longo strigoso-puberulo; bracteis exterioribus papyraceis reniformibus, circiter 6 mm. longis et 8 mm. latis, connatis, extus strigoso-puberulis et minute brunneo-glandulosis, plerumque conspicue corniculatis, bracteis interioribus similibus sed minoribus; bracteolis membranaceis obovato-spathulatis, 3–5 mm. longis, 1–4 mm. latis, dense brunneo-glanduloso-lineolatis, extus apicem versus pallido-strigosis; pedicellis ad 2 mm. longis, perianthii segmentis 4 membranaceis obovatis, 2–2.5 mm. longis, glanduloso-lineolatis, exterioribus calcaribus 0.3–0.5 mm. longis apicem versus corniculatis, filamentis 1–1.5 mm. longis, antheris oblongis 1–1.2 mm. longis.

VITI LEVU: Tholo West: Mbuyombuyo, near Namboutini, *Tabualewa 15578* (A, TYPE), June 17, 1941 (inflorescence red; native name: *mbeta*). OVALAU: *U. S. Expl. Exped.* (GH) (alt. 450 m.).

This well-marked species is distinguished not only by the leaf-characters mentioned in the key, but also by the glandular-lineolate bracteoles and staminate perianth-segments, the latter being corniculate and comparatively large.

12. **Elatostema** (§ *Euelatostema*) **tenellum** sp. nov.

Herba, caule basim versus prostrato et radicoso superne suberecto ad 50 cm. alto, apicem versus minute strigoso demum glabro; foliis alternatis, petiolis subnullis, laminis papyraceis siccitate viridibus inaequilateraliter obovato-oblongis, 5–9 cm. longis, 2–2.7 cm. latis, basi latere breviore acutis latere longiore saepe cordato-subauriculatis, apice gradatim acuminatis, margine omnino dentibus acutis 2 vel 3 per centimetrum grosse serratis, supra cystolithis stellatis 3–5 ramulosis (raro tantummodo angulatis vel linearibus) 0.08–0.25 mm. diametro inconspicue ornatis, subtus cystolithis similibus paucioribus praeditis, supra glabris vel pilis 0.3–0.7 mm. longis disperse strigosis, subtus nervis pilis ad 1 mm. longis dense strigosis, pinnatinerviis, costa supra subplana subtus elevata, nervis lateralibus utrinsecus 6–8 arcuato-adscendentibus supra planis subtus valde prominulis, venulis subimmersis; stipulis papyraceis linearibus 7–10 mm. longis dorso setulosis mox glabris; receptaculis ♀ solis visis subsessilibus 2–5 mm. diametro, bracteis numerosis in pelta suborbiculari papyracea connatis strigoso-puberulis glabratis, apice liberis et acutis, apicem versus obscure glanduloso-lineolatis; bracteolis membranaceis oblongo-lanceolatis, 1–1.5 mm. longis, 0.15–0.3 mm. latis, apicem versus strigosis; pedicellis ad 0.5 mm. longis, perianthii segmentis 3 vel 4 minutis ad 0.2 mm. longis, achenio ovoideo-ellipsoideo ad 0.8 mm. longo.

VITI LEVU: Namosi: Trail to Namosi, alt. 600 m., *Parks 20209* (A, Bish) (herb, to 50 cm. high, in wet forest). VANUA LEVU: Thakaundrove: Mt. Mariko, alt. 600–866 m., *Smith 471* (Bish, GH, TYPE, NY, UC, US), Nov. 14, 1933 (subprostrate herb, in dense undergrowth of forest).

Both the specimens bear only pistillate inflorescences. *Elatostema tenellum* is characterized by its subprostrate habit, subsessile leaf-blades, large marginal serrations, and small inflorescences. Although it bears a superficial resemblance to *E. sessile* J. R. & G. Forst., its only close allies appear to be *E. eximium* and *E. humile*.

13. **Elatostema** (§ *Euelatostema*) **humile** sp. nov.

Herba ad 40 cm. alta, caule ut videtur suberecto glabro vel apicem versus obscure strigoso; foliis alternatis, petiolis gracilibus ad 4 mm. longis mox glabris, laminis papyraceis siccitate viridibus vel subfuscis oblongo-lanceolatis, 4–9.5 cm. longis, 8–18 mm. latis, basi inaequilateraliter attenuatis, apice gradatim acuminatis, margine dentibus subacutis 1–3 per centimetrum conspicue serratis, supra cystolithis interdum 3- vel 4-partitis 0.15–0.25 mm. diametro interdum angulatis vel linearibus 0.1–0.3 mm. longis manifeste ornatis, subtus cystolithis similibus inconspicue

praeditis vel nervis dense ornatis, supra glabris, subtus glabris vel nervis pilis 0.4–0.7 mm. longis strigosis, pinnatinerviis, costa supra leviter prominula vel insculpta subtus elevata, nervis lateralibus utrinsecus 5–7 valde adscendentibus supra planis subtus prominulis, venulis obscuris; stipulis submembranaceis lanceolatis 7–10 mm. longis dorso sericeis mox glabris; receptaculis subsessilibus vel breviter pedunculatis, pedunculo ad 1.5 mm. longo strigoso-puberulo vel glabro; receptaculis ♂ 3–6 mm. diametro, bracteis exterioribus papyraceis late ovatis, 4–5 mm. longis, basi connatis, extus breviter strigosis, apicem versus breviter corniculatis, bracteis interioribus minoribus; bracteolis membranaceis oblongo-obovatis, 3–4 mm. longis, 1–2 mm. latis, obscure glanduloso-lineolatis, dorso parce strigilosis; pedicellis ad 1 mm. longis, perianthii segmentis 4 oblongis circiter 2 mm. longis, apicem versus calcare circiter 0.3 mm. longo plerumque corniculatis, antheris oblongis circiter 1 mm. longis; receptaculis ♀ 2–4 mm. diametro, bracteis numerosis submembranaceis lineari-oblongis connatis, apicem versus strigosis liberis obscure corniculatis; bracteolis membranaceis linearibus, 1–1.4 mm. longis, 0.1–0.15 mm. latis, dense strigosis; pedicellis brevissimis, perianthii segmentis obscuris, achenio ellipsoideo ad 0.8 mm. longo.

VITI LEVU: Naitasiri: Korombamba Mt., near summit, alt. 500 m., *Gillespie 2403* (Bish). TAVEUNI: Vicinity of Waiyevo, alt. 650 m., *Gillespie 4731.5* (A, TYPE, Bish), Feb. 27, 1928 (in moist stream-beds in woods above coconut plantations).

Of the two cited specimens, the type collection bears pistillate heads and no. *2403* staminate. The two plants are not exactly similar, the type being essentially glabrous throughout, while the other has a strigose pubescence on the stem, lower surface of leaves, etc. Cystoliths of no. *4731.5* are predominantly of the short linear type while no. *2403* has them commonly stellate, but intermediate forms are found on both specimens. It is possible that additional material will indicate that the two are not conspecific, but I believe it more likely, in view of their great similarity in leaf-shape, texture, etc., that future collections will disclose intermediate forms.

EXCLUDED SPECIES

**Pellionia filicoides** Seem. Fl. Vit. 239. 1868; Wedd. in DC. Prodr. **16**(1): 168. 1869.

*Elatostema filicoides* Seem. in Bonplandia **9**: 259, nomen. 1861; Schröter & Winkl. in Rep. Sp. Nov. Beih. **83**(2): 59, *quoad typum*. 1936.

*Elatostema filicoides* var. *eufilicoides* Schröter in Rep. Sp. Nov. Beih. **83**(2): 59, *quoad typum*. 1936.

VITI LEVU: Serua: Navua River, *Seemann 421* (GH, TYPE COLL.).

In proposing *P. filicoides* in Flora Vitiensis, Seemann cites his no. *421* and also collections by Williams and Harvey, but it is obvious that he considered his own collection the type, since his first combination *Elatostema filicoides* was based entirely upon it. *Seemann 421* bears a remarkable superficial resemblance to a *Pellionia*, but closer examination shows that the supposed "leaves" lack cystoliths and have a closed fern-like venation and that the "hairs" of the "branchlets" and costas are actually narrow scales. The type collection represents a sterile frond of the fern **Lomagramma polyphylla** Brack. (1854) and the above cited names should be removed to the synonymy of this fern, even though the descriptions cited are, for the most part, of plants properly referred to *Pellionia* or *Elatostema*.

**Elatostema peltatum** Hemsl. in Kew Bull. **1901**: 143. 1901.

In order properly to place this species, one must see the type collection, made on Vanua Levu by Horne. From the description, it seems unlikely that a species of *Elatostema* is represented; at least, no Fijian species with peltate leaves or with a petiole 1.5–2 inches long is known to me.

### Procris Commers.

In her monograph of the genus *Procris,* Hilde Schröter (in Rep. Sp. Nov. **45**: 179–192, 257–300. 1938) lists Fijian specimens as representing only *P. pedunculata* (J. R. & G. Forst.) Wedd. var. *eupedunculata* Schröter, this being, in fact, the only form which she mentions from the Pacific east of the Solomons and Micronesia. Among the Fijian collections available to me, it is obvious that several species are represented, three of them belonging to the group with pedunculate pistillate inflorescences (of these, two were erroneously referred by me in 1936 to the genera *Elatostema* and *Pellionia*). In this group Schröter recognizes only one species, *P. Wightiana* Wall., with a range from Africa to the Philippines and the Bonin Islands. Since most of the material of this genus belonging to American herbaria is still on loan and therefore not available, I cannot check the specific lines as proposed in the recent monograph. For the purpose of naming the Fijian specimens, I depend upon the monograph and the numerous specimens which are still available in the Gray Herbarium.

#### Key to the Fijian Species

Pistillate inflorescence sessile .....1. *P. pedunculata.*
Pistillate inflorescences obviously pedunculate.
  Cystoliths of the leaf-blades inconspicuous, very few and scattered on upper surface, absent from lower surface; leaf-blades obscurely pellucid-punctate, the glands copious, often faintly depressed above, pale and crowded beneath. .....2. *P. anfracta.*
  Cystoliths of the leaf-blades obvious on both surfaces.
    Leaf-blades 4–8 cm. long, thick, not pellucid-punctate, the glands often depressed above, obscure beneath; cystoliths 0.1–0.25 mm. long, those of upper surface 8–12 per sq. mm., those of lower surface 35–50 per sq. mm. .....3. *P. Archboldiana.*
    Leaf-blades (8–) 10–20 cm. long, minutely scrobiculate on upper surface, the lower surface often with superficial minute brown scattered glands; cystoliths 0.2–0.5 mm. long, those of upper surface 4–12 per sq. mm., those of lower surface 5–14 per sq. mm. .....4. *P. Goepeliana.*

1. **Procris pedunculata** (J. R. & G. Forst.) Wedd. in DC. Prodr. **16**(1): 191. 1869; Schröter in Rep. Sp. Nov. **45**: 259. 1938.

   *Elatostema pedunculatum* J. R. & G. Forst. Char. Gen. 106. 1776.

I have not sufficient material available to test Schröter's concept of *P. pedunculata,* but on the surface this seems very broad indeed. An examination of adequate material of this group from the Societies, the type locality, discloses that the leaf-blades are usually pellucid-punctate (at least obscurely so) and have the cystoliths on both surfaces comparatively scattered in comparison with those of the bulk of the Fijian material. The different aspects of the leaves caused by the different spacing of the cystoliths is striking, although it is rather unsatisfactorily expressed in words. While this may not be a character worthy of specific recognition, I believe that it will serve at least to mark varieties; it seems likely that Schröter's variety *eupedunculata* (based on the type of the species) should be more narrowly limited and that some of the specific names submerged by her should be given at least varietal recognition. Possibly the typical variety will be found limited to the Pacific; some of the Fijian material certainly is essentially identical with that from the Societies, Samoa, etc. On the basis of the specimens at hand I am inclined to doubt whether the bulk of the Malaysian and African material should be left in the variety *eupedunculata,* if indeed in the species at all. The form with very crowded cystoliths seems limited to Fiji and Tonga and may well be recognized as a variety. Thus, in our region, one may readily distinguish two varieties of *P. pedunculata* as follows:

Leaf-blades often pellucid-punctate or at least with obvious glands which are often depressed on the upper surface; cystoliths of the upper leaf-surface 0.13–0.25 mm. long, 8–20 per sq. mm., those of the lower leaf-surface 0.2–0.5 mm. long, 5–17 per sq. mm. var. *eupedunculata.*

Leaf-blades thicker, not pellucid-punctate, the glands obscure; cystoliths of the upper leaf-surface 0.13–0.6 mm. long, 18–45 per sq. mm., those of the lower leaf-surface 0.16–0.7 mm. long, 12–35 per. sq. mm. .....var. *ornata.*

Var. **eupedunculata** Schröter in Rep. Sp. Nov. **45:** 260. 1938, *quoad Elatostema pedunculatum* J. R. & G. Forst.

KORO: West coast, near sea-level, *Smith 1076* (GH). VANUA MBALAVU: Southern limestone section, alt. 0–100 m., *Smith 1441* (GH). FULANGA: Limestone formation, on cliff, alt. 0–80 m., *Smith 1140* (GH).

Some of the other Fijian specimens cited by Schröter (l. c. 264, 265) may belong in this concept, but they are not now available to me for examination. This variety seems less common in Fiji than the following.

Var. **ornata** var. nov.

Frutex parvus vel herba succulenta var. *eupedunculata* Schröter affinis, laminis foliorum crassioribus non pellucido-punctatis, cystolithis conspicue confertioribus ornatis differt.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 750–1000 m., *Gillespie 4297* (A, Bish) (growing on rocks in stream), *Parks 20648* (A, Bish) (low epiphytic shrub; heads red), *Degener 14848* (A) (low shrub, on wet rocks in forest); Nauwanga, near Nandarivatu, alt. 750–900 m., *Degener 14509* (A) (subligneous herb, in forest; fruiting receptacle orange; flowers white), *Degener 14826* (A, TYPE), Mar. 13, 1941 (low shrub, on wet rocks in forest; receptacle red); summit of Loma Langa Mt., alt. 1300 m., *Gillespie 3926.5* (Bish); Nasukamai, alt. 450 m., *Gillespie 4393* (Bish) (on rocks of river-bank; native name: *kau tho*); Ra: Vatundamu, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15402* (A) (on rocks in dry forest; native name: *tokai*); Tholo West: Mbuyombuyo, near Namboutini, *Tabualewa 15573* (A); Namosi: Vicinity of Namosi, alt. 400–800 m., *Parks 20179* (A, Bish) (low shrub, in wet canyon), *Gillespie 2525* (Bish) (seeds white). OVALAU: Vicinity of Levuka, alt. 350–400 m., *Gillespie 4483* (A, Bish), *4561* (Bish).

TONGA: EUA: *Parks 16044* (GH) (in pockets of limestone rocks on the Liku side of the plateau).

2. **Procris anfracta** (A. C. Sm.) comb. nov.

*Elatostema anfractum* A. C. Sm. in Bishop Mus. Bull. **141:** 58. *f. 26.* 1936.

TAVEUNI: Western slope, between Somosomo and Wairiki, alt. 700–900 m., *Smith 744* (Bish, TYPE, GH, NY, UC, US) (vine, in forest, the fruiting heads bright red).

This species and the two following differ from *P. Wightiana* Wall. (ampl. Schröter in Rep. Sp. Nov. **45:** 191, 192, 257–259. 1938) in having the pistillate inflorescences with more obvious and more slender peduncles and the leaf-blades usually entire rather than obviously crenate (although in *P. Goepeliana* inconspicuous undulate crenations are present). The differences among our species in leaf-texture and cystolith-marking are very conspicuous and appear to me of a specific nature. The above-cited collection apparently had not come to Schröter's attention at the time of her monograph, although a duplicate is in the Berlin herbarium.

3. **Procris Archboldiana** sp. nov.

Frutex scandens ubique glaber, ramulis subteretibus siccitate striatis brunneis apicem versus ramosis; stipulis oblongo-linearibus acutis 3–6 mm. longis mox caducis; foliis oppositis forsan interdum disparibus, minoribus mox deciduis, alteris petiolatis; petiolis gracilibus 4–8 mm. longis; laminis subcarnosis opacis in sicco fuscis saepe falcatis elliptico-oblongis, 4–8 cm. longis, 1.5–2.5 cm. latis,

basi inaequilateraliter obtusis, apice gradatim acuminatis vel cuspidatis, margine integris vel leviter undulatis, ubique cystolithis conspicuis 0.1–0.25 mm. longis ornatis (eis paginae inferioris densissime confertioribus), pinnatinerviis, costa supra leviter impressa subtus subprominente, nervis lateralibus utrinsecus 5–7 adscendentibus supra interdum prominulis; inflorescentiis ♀ axillaribus solitariis vel binis pedunculatis, pedunculis rectis gracilibus 4–13 mm. longis, capitulis subglobosis carnosis sub fructu 3–6 mm. diametro multifloris; bracteolis numerosis membranaceis lineari-oblongis, circiter 1 mm. longis et 0.2 mm. latis, apice obtusis; perianthii segmentis obovatis succulentis, 1–2 mm. longis et latis, basi angustatis; achenio ovoideo-ellipsoideo complanato, 1–1.3 mm. longo, 0.8–1 mm. lato, basi et apice obtuso.

VITI LEVU: Tholo North: Nandarivatu, alt. 900 m., *Gillespie 3396* (A, Bish) (vine; fruiting heads red, gelatinous; native names: *ndraindrai, sundro*); Nauwanga, vicinity of Nandarivatu, alt. 750 m., *Degener 14354* (A, TYPE), Feb. 13, 1941 (liana, appressed to tree-trunks in dark wet forest; peduncle green; fruiting heads dull red and somewhat translucent).

*Procris montana* (Endl.) Steud. has been mentioned by Gibbs (in Jour. Linn. Soc. Bot. **39**: 172. 1909) and Turrill (in Jour. Linn. Soc. Bot. **43**: 39. 1915) as occurring at Nandarivatu. That species, originally described from Norfolk Island, has been referred to *Elatostema* by Schröter (in Rep. Sp. Nov. **45**: 290. 1938); its occurrence in Fiji is very dubious. It is possible that Gibbs and Turrill had specimens of the present species.

4. **Procris Goepeliana** (A. C. Sm.) comb. nov.

*Pellionia Goepeliana* A. C. Sm. in Bishop Mus. Bull. **141**: 56. *f. 25*. 1936.

VITI LEVU: Naitasiri: Korombamba Mt., alt. about 300 m., *Parks 20144* (A, Bish) (on wet log; fruiting heads red), *Parks 20343* (A, Bish) (vine, on log in forest; fruiting heads red). KORO: Eastern slope of main ridge, alt. 300–500 m., *Smith 979* (Bish, GH, NY, UC, US) (high-climbing liana, in forest; perianth greenish, the anthers white). VANUA LEVU: Thakaundrove: Korotini Range, southern slope, alt. 300–650 m., *Smith 519* (Bish, TYPE, GH, NY, UC, US) (subligneous herb 1 m. high, in dense forest; flower-buds pale green); Mt. Mariko, alt. 600–866 m., *Smith 433* (Bish, GH, NY, UC, US) (slender shrub 1–2 m. high, in dense forest; flower-buds green).

The three specimens upon which the species was originally described bear staminate inflorescences, and I erroneously referred the plant to *Pellionia*. The Parks specimens are quite similar, although the leaf-blades are a trifle thicker and more nearly entire, but the cystolith-markings are identical. The pistillate inflorescences of these Viti Levu specimens are nearly identical with those described for *P. Archoldiana*. The two species are readily distinguished by the size of their leaves and the distribution of their cystoliths.

## BOEHMERIA Jacq.

**Boehmeria virgata** (Forst. f.) Guillem. in Ann. Sci. Nat. II. **7**: 182. 1837.

*Urtica virgata* Forst. f. Fl. Ins. Austr. Prodr. 66. 1786.

*Boehmeria platyphylla* var. *virgata* Wedd. in Arch. Mus. Paris **9**: 366. 1856; in DC. Prodr. **16**(1): 210. 1869.

*Boehmeria platyphylla* sensu Seem. Fl. Vit. 242. 1868; Gibbs in Jour. Linn. Soc. Bot. **39**: 173. 1909; non D. Don.

While there are admittedly difficulties in drawing satisfactory specific lines among *B. platyphylla* D. Don (1825) and its allies, it seems obvious that the Pacific material which has been referred to that species differs specifically from the continental and typical material in details of leaf-margins, texture, pubescence, etc. Among the abundant Fijian material of the genus which I have examined,

two forms are distinguishable, (1) plants with the leaf-blades glabrous above and with the pubescence beneath limited to the nerves and often appressed, and (2) plants with the leaf-blades more or less regularly appressed-strigose above and uniformly soft-pilose beneath. The first form tends to have slightly larger pistillate perianths than the second. Between these extremes are to be found intergrading forms, so that no line for nomenclatural separation seems advisable.

The first of these forms is quite identical with material from the Society Islands which certainly represents *B. virgata.* Even if one prefers to accept Weddell's broad specific concept, Forster's antedates Don's name by many years. However, few modern taxonomists will agree that the Pacific material is conspecific with that from the continent. True *B. virgata,* on the basis of material now available to me, seems to occur from the Marquesas and Societies westward at least to the New Hebrides. Below, in citing the available Fijian specimens, I refer them to forms (1) and (2) as outlined above:

(1). VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 800–1300 m., *Gillespie 4036* (A, Bish) (native name: *kau lolo*), *Parks 20587* (A, Bish) (tree 8–10 m. high, in forest), *Degener & Ordonez 13536* (A) (shrub 3 m. high, in forest), *Degener 14327* (A) (shrub to 2 m. high, in secondary forest; native name: *tautau*); Namosi: Near Namosi: alt. 450 m., *Gillespie 2833* (Bish). KANDAVU: *Smith 197, 209, 278, 284* (all Bish, GH, NY, UC, US) (shrubs or trees to 5 m. high, in forest, alt. 200–840 m.). VANUA LEVU: Thakaundrove: Valanga Range, alt. 200–400 m., *Smith 393* (Bish, GH, NY, UC, US) (shrub 3 m. high, in dense forest). WITHOUT DEFINITE LOCALITY: *Seemann 433* (GH), *Gillespie 2753* (A, Bish) (native name: *rambi*), *2916* (Bish), *3945* (A, Bish) (native name: *kau lolo*).

(2). VITI LEVU: Lautoka: North of Natalau, alt. 15 m., *Degener 15008* (A) (tree 3 m. high, in dry rocky forest); Ra: Near Rewasa, alt. 50–200 m., *Degener 15337* (A) (shrub about 1 m. high, in open forest; native name: *ndrendre*); Naitasiri: Tholo-i-suva, alt. 250 m., *Parks 20079* (A, Bish) (shrub 4 m. high). KORO: Eastern slope of main ridge, alt. 200–300 m., *Smith 944* (Bish, GH, NY, UC, US) (shrub 4 m. high, at edge of forest; native name: *ndongosele*). TAVEUNI: Waiyevo, alt. 200 m., *Gillespie 4696* (A, Bish) (shrub with decumbent arched branches, at edge of clearings). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (US), *Seemann 432* (GH), *Horne 303* (GH).

### PIPTURUS Wedd.

In examining the Fijian specimens of *Pipturus,* all of which belong in the Section *Eupipturus,* one meets the same problems of specific limitation so ably discussed by Skottsberg (in Acta Hort. Gothoburg. **7**: 43–63. *f. 1–49.* 1932) in connection with *P. argenteus* and its allies. Although Skottsberg does not discuss any Fijian collections in his treatment, some of our plants are obviously similar to the specimens he cites from Samoa and Rotuma. He concludes that these, together with the mass of Pacific and Papuasian material, may be referred to *P. argenteus* (Forst. f.) Wedd. in the broad sense, and more narrowly to the proposed variety *lanosus* Skottsb.

By earlier authors, several other specific names have been used for the Fijian material of this complex, namely *P. incanus* (Bl.) Wedd. (which Skottsberg [l. c. 62] believes may possibly be retained as a species of Java and Malacca), *P. propinquus* (Dec.) Wedd. (which Skottsberg [l. c. 47] proposes to retain as a variety of *P. argenteus* from Timor), and *P. velutinus* (Dec.) Wedd., which is presumably a synonym of *P. incanus.*

It is now apparent, in the light of Skottsberg's treatment, that none of these names is applicable to the Fijian material. Nevertheless I am able to distinguish three well marked forms which seem to me to merit specific status. One of these

is obviously the widespread *P. argenteus* (var. *lanosus*), a second is *P. platyphyllus* Wedd., and a third is apparently a new species, with the manuscript name *P. gracilipes* A. Gray but never described. The following key will serve to distinguish the species of *Pipturus* in Fiji:

Leaf-blades conspicuously discolorous, densely white- or grayish-lanate beneath with a closely appressed layer of weak tangled hairs, papillose above and sparsely hispid-setose with pale hairs 0.4–0.9 mm. long; pistillate perianth minutely sericeous, the hairs 0.05–0.15 mm. long ..... 1. *P. argenteus* var. *lanosus.*

Leaf-blades essentially concolorous, densely pilose beneath (hairs cinereous, subhispid, erect, 0.25–0.8 mm. long, not tangled, not obscuring the leaf-surface), papillose above and subsimilar or strigose-hispid, often glabrescent; pistillate perianth hispid-strigose, the hairs 0.15–0.25 mm. long ..... 2. *P. platyphyllus.*

Leaf-blades concolorous, short-strigillose-puberulent beneath (hairs pale, 0.05–0.15 mm. long, scarcely apparent under a hand-lens), papillose above and glabrous or with a few inconspicuous straight appressed pale hairs 0.25–0.35 mm. long; pistillate perianth inconspicuously puberulent-sericeous, the hairs 0.03–0.1 mm. long ..... 3. *P. vitiensis.*

1. **Pipturus** (§ *Eupipturus*) **argenteus** (Forst. f.) Wedd. var. **lanosus** Skottsb. in Acta Hort. Gothoberg. **7**: 62. 1932.

VITI LEVU: Lautoka: North of Lomolomo, alt. 90 m., *Degener & Ordonez 13654* (A) (spreading tree 2 m. high, on edge of forest); north of Natalau, alt. 60 m., *Degener 15007* (A) (small tree, in dry forest); Tholo North: Korovou, east of Tavua, alt. 60–150 m., *Degener 14947* (A) (tree 3–4 m. high, in isolated dry forested ravine); Mt. Matomba. Nandala, vicinity of Nandarivatu, alt. about 800 m., *Degener 14462* (A) (shrub, in scrubby forest; native name: *feu*); Naitasiri: Waindina River basin, alt. 50 m., *MacDaniels 1048* (Bish) (tree 6 m. high, in forest; native name: *rongga*). OVALAU: *Gillespie 4561.5* (A, Bish). KORO: Coastal thickets along west coast, *Smith 1078* (Bish, GH, NY, UC, US) (shrub 3 m. high; native name: *ronga*). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (GH, US), *Harvey* (GH), *Horne 345* (GH).

The above-cited specimens certainly fall into the concept covered by Skottsberg in his discussion of specimens from Samoa, Tonga, and Rotuma. The differences between this form and the typical material of *P. argenteus* from the Society Islands are found primarily in the indument of the lower surfaces of leaf-blades. I do not believe that Skottsberg's concept of either the variety or the species includes specimens which completely lack the matted lanate indument. Such specimens I refer to the following two species.

2. **Pipturus** (§ *Eupipturus*) **platyphyllus** Wedd. in DC. Prodr. **16**(1): 235[19]. 1869; Seem. Fl. Vit. 433. 1873.

VITI LEVU: Lautoka: North of Lomolomo, alt. 90 m., *Degener & Ordonez 13653* (A) (much-branched shrub 1 m. high, on sunny grassy slope). VANUA LEVU: *U. S. Expl. Exped.* (GH, US); Thakaundrove: Maravu, near Salt Lake, alt. near sea-level, *Degener & Ordonez 14230* (A) (shrub or tree 2–3 m. high, on embankment near ocean); Uluinabathi Mt., Savu Savu Bay region, alt. 60 m., *Degener & Ordonez 13928* (A) (tree 3 m. high, on lower sunny slope). WITHOUT DEFINITE LOCALITY: *Gillespie,* Dec. 29, 1927 (A, Bish) (native name: *ngala*).

The type is said to have been collected on Ovalau by Vieillard. Although I have not seen this, our specimens agree well with the description, which states, ". . . foliis . . . concoloribus supra asperato-hispidis subtus molliter pubescentibus . . ." Such a description could scarcely be applied to the specimens which I have cited as *P. argenteus* var. *lanosus.* Whether or not *P. platyphyllus* merits specific status is a question which should be considered in connection with Pacific material as a whole. It is to be hoped that Dr. Skottsberg will again treat this group, with more ample material than he had in 1932. Christophersen (in Bishop Mus. Bull. **128**: 75. 1935) cites numerous Samoan specimens as *Pipturus* aff. *argenteus,* and among them may be forms referable to *P. platyphyllus.*

3. **Pipturus** (§ *Eupipturus*) **vitiensis** sp. nov.

*Pipturus gracilipes* A. Gray ex Wedd. in DC. Prodr. **16**(1): 235[20], nomen. 1869; Seem. Fl. Vit. 433, nomen. 1873.

Frutex vel arbor gracilis ad 6 m. alta, ramulis subteretibus saepe flexuosis juventute minutissime cinereo-puberulis demum glabratis; foliis apicem ramulorum versus saepe numerosis, petiolis gracilibus ut ramulis puberulis (2–) 3–8.5 cm. longis, laminis papyraceis concoloribus siccitate fusco-viridibus ovato-ellipticis, (5–) 7–11 cm. longis, (2–) 3–8.5 cm. latis, basi rotundatis vel late obtusis, apice gradatim acuminatis (acumine ad 2 cm. longo mucronulato), margine obtuse crenato-dentatis (dentibus 1–3 per centimetrum), supra minute papillosis et glabris vel pilis paucis inconspicuis pallidis sparse strigosis, subtus pilis pallidis 0.05–0.15 mm. longis inconspicue strigilloso-puberulis, costa saepe pallida supra subplana vel leviter elevata subtus subprominente, nervis secondariis utrinsecus circiter 4 (infimis e basi adscendentibus) supra subplanis subtus leviter elevatis, rete venularum intricato subtus manifesto pilis non obscuro, areolis ultimis minutis; stipulis papyraceis oblongo-deltoideis 2.5–3 mm. longis acutis bicostatis sericeo-puberulis; inflorescentiis masculis non visis; inflorescentiis femineis simpliciter glomerato-spicatis gracilibus 2–6 cm. longis, rhachi gracili minute puberula saepe flexuosa, glomerulis multifloris 3–7 mm. inter se distantibus, receptaculo puberulo, bracteis lineari-oblongis puberulis circiter 0.5 mm. longis; perigonio submembranaceo ovoideo sub anthesi circiter 0.7 mm. sub fructu circiter 1.3 mm. longo, obscure plurinervato, inconspicue puberulo-sericeo, apice minute 4-lobato; nuce ovoidea compressa circiter 1 mm. longa et 0.7 mm. lata, breviter apiculata, stigmate 1–1.7 mm. longo.

FULANGA: Near Monothaki, alt. 0–80 m., *Smith 1108* (Bish, GH, NY, UC, US) (shrub 1–2 m. high, in thickets on limestone formation; native name: *ronga*). KAMBARA: Near Tokalau, alt. 0–100 m., *Smith 1233* (Bish, GH, TYPE, NY, UC, US), Mar. 2, 1934 (slender tree 6 m. high, on edge of forest on limestone formation; native name: *ronga*). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (source of the name *Pipturus gracilipes*, GH, US).

On the basis of the very short and inconspicuous pubescence of its leaf-blades, *P. vitiensis* must be considered specifically distinct from *P. platyphyllus* and *P. argenteus*. The leaves appear to be glabrous until closely examined. It seems advisable to ignore Gray's manuscript name and to designate as the type a more recent collection which is widely distributed in American and European herbaria. The possibility that the Exploring Expedition specimen also came from Fulanga is suggested by the following note of Pickering (Geogr. Distr. of Animals and Plants **2**: 365. 1876): "Boehmeria-like but the leaves alternate (No. 1). Leaves petioled; aments consisting of strings of capit. 'Island of Fulari,' Dr. Holmes." As the specimens of this collection are not numbered, one cannot too surely tie them to Pickering's notes, but the above description fits our plant, and "Fulari" may well refer to Fulanga. Thus the species may prove to be limited to the Lau group.

## SANTALACEAE

**Exocarpus vitiensis** sp. nov.

Frutex vel arbor ad 7 m. alta ubique praeter inflorescentiam glabra, ramulis subteretibus vel juventute leviter angulatis; petiolis gracilibus 2–5 mm. longis supra leviter canaliculatis; laminis viridibus vel siccitate fusco-viridibus chartaceis elliptico-oblongis, 4–9 cm. longis, 2–3.5 cm. latis, basi in petiolum attenuatis, apice obtusis vel inconspicue calloso-cuspidatis, margine integris, nervis primariis 5–9 a basi divergentibus supra leviter impressis vel prominulis subtus paullo elevatis, venulis reticulum inconspicuum immersum vel utrinque leviter prominulum formantibus; inflorescentiis ubique minute cinereo-puberulis, spicis axillaribus solitariis sub anthesi stipite inconspicuo incluso ad 15 mm. sub fructu ad 32 mm. longis, rhachi

1–1.3 mm. diametro; floribus 30–40 per inflorescentiam in foveolis inconspicuis sessilibus, bracteis minutis late deltoideis obtusis; perianthio sub anthesi 1.5–1.7 mm. diametro, tubo hemisphaerico, lobis 5 valvatis rotatis tenuiter carnosis deltoideis subacutis 0.5–0.7 mm. longis et latis intus obscure puberulis; disco carnoso pentagono; staminibus 5, antheris ad marginem disci subsessilibus inflexis transverse ellipsoideis 0.3–0.4 mm. latis, loculis rimis introrso-lateralibus dehiscentibus; ovario in disco semi-immerso, stigmate sessili; fructibus minute cinereo-puberulis glabrescentibus, parte inferiore obconica ad 9 mm. longa et summo ad 8 mm. diametro, fructibus ipsis semi-ovoideis ad 10 mm. longis et basim versus ad 8 mm. diametro, leviter 5-angulatis, apice truncatis et inconspicue emarginatis.

VITI LEVU: Tholo North: Nandarivatu, alt. 800–900 m., *Degener & Ordonez 13557* (A, TYPE), Nov. 20, 1940 (shrub or small tree about 2 m. high, in rain-forest). VANUA MBALAVU: Northern limestone section, alt. 150 m., *Smith 1502* (GH, NY) (tree 7 m. high, in forest on exposed cliff).

This is the species which I questionably referred to *E. latifolius* R. Br. (in Bishop Mus. Bull. **141**: 49. 1936). The Viti Levu collection bears good flowers and a single mature fruit, making desirable a separation of the cited material from the well-known Australasian and Malaysian species, which is doubtless its closest ally. *Exocarpus vitiensis* differs from *E. latifolius* in having its spikes apparently always solitary (rather than often several in leaf-axils or branched), its flowers comparatively less crowded and larger (1.5–1.7 mm. rather than 1–1.3 mm. in diameter), and its fruits semi-ovoid, lightly 5-angled, and about equal in length to the swollen stalk (rather than subglobose, smooth, and conspicuously larger than the stalk).

## BALANOPHORACEAE

**Balanophora fungosa** J. R. & G. Forst. Char. Gen. 100. 1776; G. Forst. Fl. Ins. Austr. Prodr. 64. 1786; Seem. Fl. Vit. 99. 1865.

VITI LEVU: Ra: Vatundamu, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15418* (A) (parasitic on roots of a *Citrus* and other species, on dry forested forehill; entire plant pale yellow except for grayish rootstock, appearing just above surface of ground when flowering; native name: *tumbutumbu*).

The only previously cited collection of this family from Fiji was a specimen collected by Milne on Moala, which Seemann did not see but which he cites on the authority of Milne (in Hook. Jour. Bot. & Kew Misc. **7**: 152. 1855). Seemann gives no reason for referring Milne's collection to *B. fungosa,* but he implies this to be the common Pacific species, extending from the Society Islands to the New Hebrides and Australia. The species of the Society Islands has since been referred to *B. pallens* (Sol.) Setchell (in Univ. Cal. Publ. Bot. **12**: 173. *pl. 29, 30.* 1926). Setchell (l. c.) implies that the Australian plant which J. D. Hooker (in Trans. Linn. Soc. **22**: 46. *pl. 8.* 1856) refers to *B. fungosa* may actually differ from that species. As to the Degener collection, however, there seems little doubt that it is conspecific with the New Hebrides plant which is the type of the species, as this is described and figured by J. R. and G. Forster (Char. Gen. 99, 100. *pl. 50.* 1776). Although *B. fungosa* may be locally common at certain seasons, it is definitely rare in herbarium collections. Its rediscovery in Fiji and the collection of fine herbarium material are of great interest.

## AMARANTHACEAE

**Deeringia amaranthoides** (Lam.) Merr. Interpret. Herb. Amb. 211. 1917.

VITI LEVU: Ra: Vatundamusewa, vicinity of Rewasa, near Vaileka, alt. about 200 m., *Degener 15463* (A) (liana, in open forest; leaves edible when cooked; native name: *tokoi*).

KORO: East coast, near sea-level, *Smith 1032* (GH, NY) (vine, in thickets). WITHOUT LOCALITY: *U. S. Expl. Exped.* (GH).

This common continental and Malaysian plant has not been reported in the Pacific east of Papuasia, as far as I can discover, except from Micronesia. The genus is new to the Fijian flora.

**Alternanthera sessilis** (L.) R. Br. ex R. & S. Syst. **5**: 554. 1819; Christoph. in Bishop Mus. Bull. **128**: 83. 1935.

VITI LEVU: Tholo West: Mbelo, near Vatukarasa, alt. 120 m., *Degener 15216* (GH) (in shallow water of marsh).

Although said to be common in Samoa, this weed has apparently not previously been reported from Fiji.

## ANNONACEAE

**Desmos insularis** sp. nov.

Arbor compacta circiter 5 m. alta, ramulis gracilibus teretibus fusco-cinereis copiose lenticellatis, juventute pilis brunneo-cinereis ad 1 mm. longis simplicibus strigosis mox glabratis; petiolis inconspicuis subteretibus 1–2 mm. longis ut ramulis strigosis; laminis chartaceis vel papyraceis anguste elliptico-oblongis, 4–10 cm. longis, 1.5–4 cm. latis, basi cordatis vel truncato-subcordatis, apice obtusis, margine integris et planis, supra glabris vel juventute et interdum nervis parce hispidis, subtus pilis simplicibus circiter 0.5 mm. longis albo-cinereo-hispidulis, costa supra subplana vel leviter elevata subtus valde elevata, nervis secundariis utrinsecus 7–12 subpatentibus marginem versus adscendentibus et irregulariter conjunctis supra leviter subtus conspicue prominulis, rete venularum intricato utrinque paullo prominulo; inflorescentiis axillaribus breviter paniculatis 1–1.5 (–3.5) cm. longis, rhachi ramulisque rugulosis parce cinereo-pilosis, bracteis lanceolato-deltoideis 1.5–2 mm. longis acutis adpresso-strigulosis; floribus pluribus sed sub anthesi plerumque solitariis, pedicellis crassis strigulosis circiter 2 mm. longis bractea orbiculari circiter 0.5 mm. diametro caduca subtentis; calyce sub anthesi 3–4 mm. diametro extus brunneo-striguloso intus glabro fere ad basim 3(vel 4-)-lobato, lobis deltoideis valvatis acutis circiter 1.5 mm. longis et latis; petalis 6 (raro 8) biseriatis ut videtur valvatis subcarnosis subaequalibus ovatis, circiter 3.5 mm. longis, 1.3–2 mm. latis, apice breviter acuminatis, extus dense brunneo-tomentellis, intus glabris apicem versus tomentellis; toro leviter concavo pilis circiter 0.3 mm. longis brunneo-crisposo-strigoso; staminibus numerosis (70–80) congestis 0.8–1.2 mm. longis, filamentis minutis, connectivo apicem versus incrassato et truncato, loculis lineari-ellipsoideis; pistillis paucis (ut videtur 4 vel 5) sub anthesi circiter 1.5 mm. longis, ovario pallide brunneo-setoso oblongo-ellipsoideo obscure pellucido-punctato, ovulis circiter 6–8 ut videtur biseriatis, stigmate subsessili subgloboso circiter 0.3 mm. diametro; pedicellis sub fructu incrassatis glabratis a rhachi haud distinctis, calyce subpersistente, receptaculo parvo dense strigoso; carpellis plerumque 2–4 ellipsoideo-oblongis plerumque 2.5–4 cm. longis et 7–10 mm. diametro subtorulosis, basi in stipitem 2–4 mm. longum abrupte contractis, apice conspicue cuspidatis (apice circiter 2 mm. longo obtuso), pericarpio tenui duro pilis minutis densissime brunneo-tomentello plerumque conspicue tuberculato, seminibus 6–8 (vel ut videtur raro ad 1 reductis) oblique superpositis subglobosis vel complanatis.

VITI LEVU: Tholo North: Korovou, east of Tavua, alt. 60–120 m., *Degener 14968* (A, TYPE), Apr. 1, 1941 (compact tree 5 m. high, in isolated dry forested ravine; fruit brownish gray).

The generic disposition of this plant, which is one of Mr. Degener's most interesting discoveries, is questionable. The essential characters, however, seem to point to the genus *Desmos* Lour., which has not previously been reported east of

the Philippines. Our plant is almost certainly a member of the tribe Unoneae, in which its free petals and numerous ovules indicate such genera as *Canangium* Baill. and *Desmos* Lour. (the correct genus for the Old World species once referred to *Unona* L.). The new species is characterized by its comparatively small and thin leaf-blades, which are persistently pilose beneath and with inconspicuous veinlets. Only a single mature flower and one bud were found, and so the above dimensions are not reliable, although they indicate unusually small flowers for the genus. Additional flowering material may well indicate the desirability of erecting a new genus for this plant. The fact that the ovules are biseriate and the seeds obliquely rather than strictly superposed would seem to differentiate it from the species of *Desmos*. In the absence of ample flowering material, however, it seems unwise to propose a new genus for the Fijian plant at present. The fruits of our species are conspicuous for their close persistent pubescence, cuspidate apices, and tuberculate surfaces.

Were the petals of our plant imbricate, the genus *Uvaria* L. might be considered, but *Uvaria* is excluded by its perianth characters, scandent habit, and the presence of stellate hairs. The New Caledonian representative of *Uvaria, U. Baillonii* Guillaumin, seems very dubiously placed in that genus.

**Polyalthia pedicellata** A. C. Sm. in Bishop Mus. Bull. **141:** 61. *fig. 29.* 1936.

VITI LEVU: Tholo North: Nauwanga, vicinity of Nandarivatu, alt. about 750 m., *Degener 14719* (A), *14737* (A) (trees, in forest; bark used for rope; native name: *makosoi*).

The two cited collections, both in fruit, agree excellently with the type and only previously known collection, obtained at high elevation on Vanua Levu.

**Xylopia vitiensis** nom. nov.

*Fissistigma sericeum* A. C. Sm. in Bishop Mus. Bull. **141:** 62. *fig. 30.* 1936; not *Xylopia sericea* St. Hil. (1825).

VITI LEVU: Rewa: Vicinity of Suva, *Tothill F516* (A).

I erroneously referred this species to *Fissistigma* in 1936. A re-examination and due consideration of such characters as the arboreal habit, the narrow petals, and the flattened or slightly concave receptacle indicate the place of the species in *Xylopia* L. The genus *Fissistigma,* therefore, is still unknown from Fiji. *Xylopia* has not previously been reported east of Papuasia and New Caledonia. The alliance of our species with those of the nearest areas is remote.

The Tothill specimen agrees perfectly with the type, collected on the lower slopes of Mt. Mbatini on Vanua Levu, in vegetative characters. It is accompanied by a single detached carpel which is apparently not quite mature. This carpel, identical with those of the type in shape and proportions, lacks the lining of air-cavities previously described and figured by me. It may be assumed that these develop only with age or that they do not provide a constant character.

**Xylopia Degeneri** sp. nov.

Arbor circiter 4 m. alta ubique praeter inflorescentiam et ramulos juveniles puberulos glabra, ramulis purpurascentibus conspicue flexuosis rugosis copiose et pallide lenticellatis; petiolis gracilibus (circiter 1.5 mm. diametro) canaliculatis rugulosis 15–20 mm. longis; laminis subcoriaceis siccitate viridi-olivaceis oblongo-ellipticis, 7–10 cm. longis, 3–4.5 cm. latis, basi late obtusis et in petiolum decurrentibus, apice rotundatis et interdum inconspicue callosis, margine integris et paullo incrassatis, subtus inconspicue sed dense pallido-glandulosis, costa supra subplana subtus prominente, nervis secundariis utrinsecus 9–12 patentibus marginem versus anastomosantibus cum rete venularum intricato utrinque valde prominulis; inflorescentiis apicem ramulorum versus axillaribus brevibus pauci-

floris (sub anthesi floribus plerumque solitariis), rhachi pedicellisque parce pallido-aureo-sericeis, pedicellis crassis sub anthesi 2–3 mm. longis bractea suborbiculari sericea 1–1.5 mm. longa subtentis; calyce subrotato sub anthesi 8–9 mm. diametro ut pedicellis pilis 0.2–0.3 mm. longis extus sericeo intus glabro, sepalis 3 ovato-deltoideis circiter 5 mm. longis et latis apice acutis vel cuspidatis; corolla cylindrico-urceolata inconspicue hexagona 28–30 mm. longa, basi conspicue dilatata, petalis 6 crasse carnosis valvatis biseriatis, exterioribus 3 lanceolatis circiter 3 mm. latis, basim versus ad 5–6 mm. dilatatis, extus dense aureo-sericeis, intus minute et pallide puberulis, interioribus 3 subulatis minute puberulis trigonis 1–1.2 mm. latis, basim versus ad 4 mm. subito incrassatis; toro leviter convexo vel complanato; staminibus numerosis congestis 2–2.2 mm. longis, filamentis ligulatis brevissimis, connectivo in appendiculam subglobosam minute papillosam circiter 0.25 mm. diametro producto, loculis linearibus septatis; pistillis paucis ut videtur stamina longitudine subaequantibus, ovario ellipsoideo pallide sericeo, ovulis circiter 8 superpositis; pedicellis sub fructu incrassatis ad 8 mm. longis, receptaculo subgloboso, carpellis maturis ut videtur 5–8 coriaceis anguste ellipsoideo-oblongis plerumque inconspicue torulosis, stipite incluso 2.5–4.5 cm. longis, 6–8 mm. latis, inconspicue circumcarinatis, basi in stipitem crassum ad 1 cm. longum contractis, apice inaequilateraliter obtuse cuspidatis, pericarpio tenui (circiter 0.5 mm. crasso), seminibus circiter 6 (vel abortu paucioribus) superpositis obliquis brunneis nitidis ovoideis, 8–9 mm. longis, 3–5 mm. latis.

VITI LEVU: Serua: Vatutavathe, vicinity of Ngaloa, alt. 150 m., *Degener 15204* (A, TYPE), May 5, 1941 (tree 4 m. high, in forest; flowers yellowish).

In vegetative characters, *X. Degeneri* is scarcely distinguishable from *X. vitiensis* A. C. Sm., having essentially similar leaves; the branchlets of the new species are more conspicuously and regularly flexuose. The flowers of *X. Degeneri* resemble those of its relative in such characters as pubescence and general appearance, differing in their much longer petals and stamens, the latter being 3–4 times the length of those of *X. vitiensis* and having conspicuously septate locules. The fruits of the new species differ in shape from those of *X. vitiensis,* being longer and much narrower, with a more conspicuous stipe and with slight dorsal and ventral keels. The pericarp is thinner and lacks air-cavities, while the seeds are somewhat smaller. That the described fruits are quite mature is shown by the fully developed endosperm.

**Cyathocalyx vitiensis** A. C. Sm. in Bishop Mus. Bull. **141:** 64. *fig. 31.* 1936.

VITI LEVU: Tholo North: Mt. Matomba, Nandala, vicinity of Nandarivatu, alt. 750 m., *Degener 14638* (A) (tree, in forest; flowers green; bark used for rope; native name: *makosoi*); Naitasiri: Suva Pumping Station, alt. 30 m., *Degener & Ordonez 13744* (A) (few-branched tree 5 m. high, in open forest; flowers greenish).

The species has previously been known only from the type collection, obtained in the Wainunu River valley on Vanua Levu. The cited specimens agree excellently with the type.

**Oxymitra monosperma** (A. Gray) A. C. Sm. in Bishop Mus. Bull. **141:** 62. 1936.

*Richella monosperma* A. Gray, Bot. U. S. Expl. Exped. **1:** 28. *pl. 2.* 1854; Seem. Fl. Vit. 5. 1865.

VITI LEVU: Tholo North: Nandala, vicinity of Nandarivatu, alt. 750 m., *Degener 14385a* (A) (slender few-branched cauliflorous tree 6 m. high, in dense forest); Mt. Matomba, Nandala, alt. 750 m., *Degener 14639* (A) (tree, in forest; bark used for rope; native name: *makosoi*); Naitasiri: Vicinity of Nasinu, near Suva, alt. 150 m., *Gillespie 3652* (GH, NY). OVALAU: Near summit of main range west of Levuka, alt. 500 m., *Gillespie 4440* (GH, NY).

At the time I proposed the above combination I had seen only the type collection, from Ovalau. The cited specimens agree very well with this and serve to give a better picture of the distribution of the species.

**Annona glabra** L. Sp. Pl. 537. 1753.

VITI LEVU: Serua: Ngaloa, near sea-level, *Degener 15069* (A) (tree 2–3 m. high, in wet coastal meadow; petals yellow, reddish within toward base; fruit red, edible when ripe; native name: *kaitambu*).

This species has not previously been reported from Fiji and apparently has not been commonly introduced into the Asiatic tropics.

**Annona squamosa** L. Sp. Pl. 537. 1753.

FULANGA: On limestone formation, alt. near sea-level, *Smith 1193* (NY) (tree 10 m. high, in clearing; fruit edible; native name: *apeli*).

This introduced species has not previously been mentioned from Fiji, although it has been reported from several of the neighboring groups.

## LAURACEAE

By C. K. ALLEN

**Cinnamomum Degeneri** Allen, sp. nov.

Arbor, ramulis dense fulvo-tomentosis, mox glabrescentibus teretibus striatis atro-rubescentibus sat robustis. Folia opposita vel alternata, ovata, 6.5–8 cm. longa, 3.5–4.5 cm. lata, subcoriacea, leviter acuminata vel attenuato-acuminata, basi rotundata, supra nitida, glabra, subtus dense et pallide ferrugineo-lanuginosa, mox glabrescentia, triplinervia, nervis supra leviter subtus conspicue elevatis, petiolis gracilibus 1.5 cm. longis glabris atratis. Inflorescentia subterminalis, laxe cymosa, ad 6 cm. longa, dense fulvo-lanuginosa, pauciflora, pedunculis ad 3 cm. longis. Flores 4–5 mm. longi, dense fulvo-lanuginosi, perianthii lobis ovatis, intus pubescentibus ad 2 mm. longis, tubo circiter 2 mm. longo, pedicellis gracilibus lanuginosis ad 1 cm. longis, summis leviter crassis. Fructus ignotus.

VITI LEVU: Tholo North: Nauwanga, vicinity of Nandarivatu, alt. 750 m., *Degener 14531* (A, TYPE), Feb. 24, 1941 (tree, in dense forest; native name: *mathou*).

The leaf outline of this species is not particularly outstanding, being ovate with a more or less attenuately acuminate tip, but the ferrugineous-lanuginose indument covering the young leaves and branchlets is distinctive. Unusual also is the densely fulvous or greyish woolly inflorescence, with large flowers. This heavy indument is reminiscent of that found on *C. sulphuratum* Nees of India, in which, however, it is not as pronounced and is a yellowish brown in color. A few of the flowers are in the post anthesis stage, showing where the line of abscission occurs, leaving the rounded lobes that will eventually enlarge to form the cupule subtending the expanded fruit. The bark of the dried specimen, when scraped, yields a pleasant aromatic fragrance.

**Cryptocarya Degeneri** Allen, sp. nov.

Arbor ad 6 m. alta, ramulis minute pallide brunneo-pubescentibus mox atro-pubescentibus demum glabrescentibus atro-rubescentibus griseis teretibus striatis. Folia alternata, ovata vel elliptica, (9–) 10–14.5 cm. longa, 4.5–6 cm. lata, pergamentacea, obtuse acuminata, basi rotundata saepe subcordata vel raro abrupte acuminata, utrinque glabra, novella subtus argenteo-sericea, minute et dense glanduloso-punctata, subtriplinervia, nervis brunnescentibus supra leviter et conspicue subtus conspicue elevatis, nervis lateralibus 1 vel 2 sat inconspicuis, venis transversis subparallelibus, utrinque reticulata, petiolis 1–2 cm. longis atratis minute tuberculatis pubescentibus mox glabris. Inflorescentia immatura, axil-

laris, ad 1 cm. longa, fulvo-pubescens mox glabra, pedunculis gracilibus brevibus. Flores ignoti. Fructus in sicco nigrescens, glaber, tuberculatus, leviter costatus, subglobosus, apice perianthii tubi reliquiis coronatus, 10 × 9 mm., pedicellis leviter incrassatis 2 mm. longis 1 mm. crassis pubescentibus.

VITI LEVU: Ra: Mataimeravula, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15412* (A, TYPE), June 3, 1941 (tree 5 m. high, in forest; bark added to coconut oil for fragrance; native name: *motho*); Tholo North: Vicinity of Nandarivatu, alt. 750 m., *Degener 14311* (A) (tree 3–5 m. high, in dark dense forest along stream); Tholo West: Lumuka, vicinity of Mbelo, near Vatukarasa, alt. 250 m., *Degener 15228* (A) (tree 6 m. high, in forest).

There is no known species from Fiji with which the above may claim relationship. It is similar in many respects to *C. trinervia* Elmer from the Philippines, but the leaves of the latter are elliptic. The fruit and habit resemble those of *C. exfoliata* Allen from New Guinea, but the leaves of the latter are less prominently three-nerved, of thicker texture, and smaller.

**Cryptocarya constricta** Allen, sp. nov.

Arbor, ramulis novellis breviter ferrugineo-tomentosis mox glabrescentibus teretibus plus minusve striatis griseis. Folia alternata, oblonga, 13–20 cm. longa, 3.7–7 cm. lata, coriacea, caudata vel acuminata, raro obtusa, basi cuneata, supra venis exceptis glabra vel minute pubescentia, subtus glauca, venis utrinque dense ferrugineo-tomentosis, penninervia, nervis 6 vel 7 supra inconspicuis brunnescenti-pubescentibus subtus conspicue elevatis dense ferrugineo-tomentosis, venis transversis subparallelibus, subtus laxe reticulata, petiolis ad 2 cm. longis robustis dense ferrugineo-tomentosis mox glabrescentibus demum glabris striatis. Inflorescentia ignota, probabiliter dense ferrugineo-tomentosa. Fructus in sicco nigrescens, glaber, leviter et obscure costatus, ellipsoideus, utrinque attenuatus, apice perianthii tubi reliquiis coronatus, basi constrictus, 2 × 1.5 cm., pedicellis sat incrassatis brevibus pubescentibus.

VITI LEVU: Naitasiri: Suva Pumping Station, alt. 30 m., *Degener & Ordonez 13761* (A, TYPE), Dec. 15, 1940 (tree, in forest).

This species is striking because of the densely ferrugineous-tomentose venation standing out in relief against the pale glaucous grey lower leaf-surface. The fruit constricted at the base, simulating a stipe about twice as wide as the pedicel and only about 2 mm. in length, presents a unique character. There is no known species with which the above has a close affinity, although it bears a superficial resemblance in fruit and leaf characters to several recently described species from New Guinea.

**Endiandra monticola** A. C. Sm. in Bishop Mus. Bull. **141**: 71. *fig. 36.* 1936.

VITI LEVU: Naitasiri: Suva Pumping Station, in forest, alt. 30 m., *Degener & Ordonez 13775* (A).

The type, *Smith 563* from Vanua Levu, is in flower. Degener's number is apparently the only fruiting specimen that has been collected. Unfortunately it is a poor specimen and a unicate, and hence description of the fruit must be postponed until better material is available. There can be no doubt, however, that the two numbers are conspecific.

## CRASSULACEAE

**Bryophyllum pinnatum** (Lam.) Kurz in Jour. As. Soc. Beng. **40**(2): 52. 1871.

VITI LEVU: Tholo West: Near Saru, *Tabualewa 15618* (GH) (native name: *thakomana*).

This widespread weed has apparently not otherwise been reported from the group; the family also is new to Fiji.

ROSACEAE

**Chrysobalanus Icaco** L. Sp. Pl. 513. 1753.

VITI LEVU: Rewa: Near Suva, *Parham 20* (A) (shrub, near a creek; fruit yellow).

This widespread American plant is apparently here first recorded for the Pacific region. According to Mrs. Parham's notes, it is probably becoming naturalized in Fiji.

LEGUMINOSAE

**Schrankia distachya** DC. Prodr. **2**: 443. 1825, vel aff.

VITI LEVU: Nandronga: Government Farm, Singatoka, *Greenwood 838* (A) (low shrub, up to 1.5 m. high, sending out long shoots near ground level).

Since the specimen bears neither flowers nor fruits, the identification is tentative; our plant agrees with Mexican material of *S. distachya* in its pilose stem and pubescent leaflets, but has the leaflets smaller on the average. The collector notes that the species is evidently a recent arrival in Fiji. The genus has apparently not been recorded from the Pacific area.

**Maniltoa grandiflora** (A. Gray) Scheff. in Ann. Jard. Bot. Buitenz. **1**: 20. 1876.

*Cynometra grandiflora* A. Gray, Bot. U. S. Expl. Exped. **1**: 470. *pl. 52.* 1854; Seem. Fl. Vit. 71. 1865.

It seems that the correct authority for the accepted binomial for this Fijian species is Scheffer, even though his description (l. c.) applies exclusively to a New Guinea species which was later named *M. Schefferi* K. Schum. (in K. Schum. & Hollr. Fl. Kais. Wilh. 101. 1889). Because of Scheffer's misidentification of the New Guinea plant, Harms apparently thought it desirable to propose a new combination for Gray's species, *Maniltoa grandiflora* (A. Gray) Harms (in Engl. & Prantl, Nat. Pfl. Nachtr. III. **3**: 194. 1897; in Notizbl. Bot. Gart. Berlin **3**: 191. 1902; in Bot. Jahrb. **55**: 48. 1917). This was not necessary, for the fact that Scheffer misidentified his New Guinea species does not affect the status of his new combination.

Since the genus *Maniltoa* received its first description in connection with *M. grandiflora,* the only binomial proposed by Scheffer, the question of the typification of the genus arises. In this case it is probably advisable to take Scheffer's actual description (later referred to *M. Schefferi*) as the basis of the genus and to designate *M. Schefferi* as the type-species. Nevertheless, the validity of Scheffer's combination based on *Cynometra grandiflora* A. Gray seems unquestionable. Since the two species appear to be congeneric, the selection of the genotype is not likely to cause confusion.

In his original description, Gray indicates that there are two or three forms of this species, and his plate illustrates specimens which have obviously come from three plants. Four sheets are available to me, deposited in the Gray Herbarium and the U. S. National Herbarium. The floral details of the plate are from the specimen illustrated in *fig. B,* and this specimen (US), which has the best inflorescences, is doubtless to be taken as the actual type. The specimen upon which *fig. A* is based is to be found in the Gray Herbarium. Both herbaria have specimens from the plant which served as the basis for *fig. C.* Although slight foliage differences exist among these various specimens, the collections now available do not indicate differences of nomenclatural value. As I interpret the species, it is represented by the following specimens:

VITI LEVU: Nandronga: Singatoka River, *Greenwood 423B* (A) (tree to 23 m. high, in forest along creek; bark gray); Tholo West: Naruku, vicinity of Mbelo, near

Vatukarasa, alt. 250 m., *Degener 15317* (A) (tree 8 m. high, in forest; native name: *yamo;* timbers used for house-posts). VANUA LEVU: *U. S. Expl. Exped.* (illustr. as *fig. B*) (US, TYPE); *U. S. Expl. Exped.* (illustr. as *fig. A*) (GH); Thakaundrove: Uluinabathi Mt., Savu Savu Bay region, *Degener & Ordonez 13949* (A) (tree 3 m. high, in forest). OVALAU: *U. S. Expl. Exped.* (illustr. as *fig. C*) (GH, US). KORO: Eastern slope of main ridge, alt. 300–500 m., *Smith 1022* (GH, NY, US) (tree 20 m. high, in dense forest; leaf-buds brown-pilose). WITHOUT DEFINITE LOCALITY: *Seemann 138,* in part (GH); *Horne 519* (GH).

**Maniltoa minor** sp. nov.

Arbor ad 13 m. alta sub anthesi ubique glabra, ramulis subteretibus cinereis rugulosis inconspicue lenticellatis; foliis 2-jugis vel interdum apicem ramulorum versus unijugis, petiolis subteretibus rugulosis 3–6 mm. longis, petiolulis inconspicuis circiter 1 mm. longis; laminis foliolorum subcoriaceis in sicco viridi-olivaceis inaequilateraliter ellipticis, 2.5–4 cm. longis, 1.7–2.5 cm. latis, basi latere inferiore rotundatis vel late obtusis superiore gradatim angustatis, apice late obtusis et emarginatis, margine integris et paullo incrassatis, utrinque in sicco rugulosis, costa recta vel leviter curvata utrinque elevata, nervis lateralibus utrinsecus 5–8 cum aliis debilioribus interspersis marginem versus anastomosantibus utrinque paullo prominulis vel supra subplanis, rete venularum intricato subimmerso vel subtus prominulo; inflorescentiis axillaribus racemosis basi multibracteatis, bracteis imbricatis papyraceis concavis, exterioribus late ovatis 1–2 mm. longis, interioribus caducis non visis sed forsan majoribus, rhachi crassa demum 1.5–2 cm. longa basibus florum conspicue incrassata; pedicellis gracilibus teretibus 14–18 mm. longis, basi bractea decidua et bracteolis 2 oblongis circiter 1.5 mm. longis dorsaliter costa sparse hispidis subtentis, apice in receptaculum circiter 1.5 mm. diametro incrassatis; floribus numerosis circiter 15–20 per inflorescentiam; sepalis, petalis staminibusque e margine tubi brevis cylindrici orientibus, tubo 0.5–1 mm. longo basi cicatricoso demum e receptaculo circumciso; sepalis 5 sub anthesi reflexis submembranaceis oblongis, 6.5–7 mm. longis, 2–4 mm. latis, apice obtusis, sparse nervatis; petalis 5 submembranaceis anguste obovato-ellipticis, 7–8 mm. longis, circiter 1.5 mm. latis, apice subacutis, basim versus angustatis; staminibus 25–30, 1- vel 2-seriatis, filamentis filiformibus 10–12 mm. longis, antheris oblongis circiter 1 mm. longis medio dorsifixis, apice mucronulatis; ovario pallido interdum minute puberulo mox glabro breviter stipitato, ovulo unico, stylo filiformi circiter 7 mm. longo, stigmate minute capitato.

MOALA: Near Maloku, alt. 200 m., *Smith 1333* (GH, TYPE, NY, US), Mar. 22, 1934 (tree 13 m. high; petals and filaments white; native name: *thimbithimbi;* wood considered good for houses). WITHOUT DEFINITE LOCALITY: *Seemann 138,* in part (GH).

*Maniltoa minor* is related to *M. grandiflora* (A. Gray) Scheff., but the two species differ in many obvious floral characters. The sepals, petals, and stamens of *M. grandiflora* are borne separately on the margin of the receptacle, while in *M. minor* these organs arise from a short cylindric tube. At the base of this tube, a ring of scars indicates that bracts were probably present in bud. This character may prove to be of generic significance, but until young inflorescences of *M. minor* are available I prefer to place the species in *Maniltoa.* The ovules of the new species are solitary rather than two per ovary, as in *M. grandiflora.* In addition, the flowers of *M. minor* are smaller in all details, as indicated by the following dimensions for *M. grandiflora:* sepals 10–15 mm. long and 4–7 mm. broad; petals 12–19 mm. long and 3–4 mm. broad; filaments 15–25 mm. long; style 9–10 mm. long. The leaflet-blades of *M. grandiflora* are 4.5–10 cm. long and 2–5.5 cm. broad, being thus substantially larger than those of the new species.

*Seemann 138* (GH) consists of collections which appear to have come from three plants. Two of them are referable to *M. grandiflora,* but the third, which

is sterile, has leaves essentially identical with those of *Smith 1333,* and I refer it to the new species with confidence.

**Cynometra falcata** A. Gray, Bot. U. S. Expl. Exped. **1**: 472. 1854; Seem. Fl. Vit. 71. 1865.

VITI LEVU: Mba: *U. S. Expl. Exped.* (US, TYPE).

This species has been confused with *Maniltoa grandiflora* in herbaria, but it is easily distinguished from that species by its fewer stamens, small flowers and bracts, and its single pair of leaflets (rather than 2 or 3 pairs as in *Maniltoa grandiflora,* where the leaflets are only rarely reduced to a single pair). I have seen no material referable to *C. falcata* except the type.

**Cynometra insularis** sp. nov.

Arbor ad 15 m. alta inflorescentiis exceptis glabra, ramulis crassis subteretibus rugulosis cinereis lenticellatis; foliis unijugis petiolatis, petiolis rectis supra interdum leviter canaliculatis 12–25 mm. longis, petiolulis inconspicuis 1–3 mm. longis; laminis foliolorum coriaceis siccitate viridibus vel olivaceis inaequilateraliter oblongis, 6–8 cm. longis, 2.5–4.5 cm. latis, basi latere inferiore rotundatis superiore gradatim angustatis, apice obtuse cuspidatis vel inconspicue emarginatis, margine integris et paullo recurvatis, utrinque in sicco rugulosis, costa recta supra leviter elevata subtus prominente, nervis lateralibus utrinsecus circiter 10 cum aliis debilioribus interspersis supra paullo impressis subtus prominulis vel planis, rete venularum intricato immerso supra inconspicue impresso subtus obscuro; inflorescentiis axillaribus racemosis basi multibracteatis, bracteis imbricatis concavis papyraceis vel subcoriaceis leviter striatis demum caducis, exterioribus subglabris late ovatis circiter 2 mm. longis, interioribus oblongo-ellipticis ad 10 mm. longis et 7 mm. latis, extus dense puberulis vel sericeis, apice obtusis vel rotundatis, rhachi crassa demum 1.5–2.5 cm. longa pilis pallidis circiter 0.5 mm. longis dense patente-pilosa basibus florum conspicue incrassata; pedicellis gracilibus sub anthesi 8–14 mm. longis ut rhachi pilosis, basi bractea decidua ut bracteis basalibus interioribus atque bracteolis 2 anguste oblongis circiter 4 mm. longis puberulis subtentis, apice in receptaculum parvum conspicue incrassatis; floribus numerosis circiter 25–30 per inflorescentiam; sepalis 5 membranaceis sub anthesi reflexis oblongis, 5–6 mm. longis, 2–3 mm. latis, sparse reticulato-nervatis, apice rotundatis, extus puberulis; petalis 5 membranaceis erectis glabris anguste oblongo-ellipticis, 7–8 mm. longis, 2–3 mm. latis, apice subacutis, basim versus angustatis, inconspicue nervatis; staminibus 10 glabris, filamentis filiformibus 10–15 mm. longis, apicem versus gradatim attenuatis, antheris late oblongis medio dorsifixis circiter 1.5 mm. longis, apice mucronulatis, loculis basi divaricatis; ovario breviter stipitato late ellipsoideo complanato ut pedicellis piloso, stylo crasso tereti sub anthesi 4–7 mm. longo, stigmate minuto capitato, ovulo unico; fructibus oblongo-ellipsoideis, circiter 4.5 cm. longis et 3.5 cm. latis et 3 mm. crassis, pericarpio rugoso, suturis leviter impressis.

VITI LEVU: Ra: Mataimeravula, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15433* (A) (tree 6 m. high, in open forest; flowers whitish; native name: *movi;* timbers used for house-posts); Vatundamusewa, near Rewasa, *Degener 15491* (A, TYPE), June 6, 1941 (tree, in open forest); Waindawa, near Rewasa, *Degener 15494* (A) (tree, in open forest; native name: *movi*). TAVEUNI: Western slope, between Somosomo and Wairiki, alt. 500 m., *Smith 843* (GH, NY, US) (tree 15 m. high, in woods).

*Cynometra insularis* is a relative of *C. falcata* A. Gray, from which it differs in having its leaves with petioles 12–25 mm. long, those of *C. falcata* being subsessile, on petioles scarcely 3 mm. long. The leaflets of the new species are slightly thicker in texture and have the secondaries lightly impressed rather than prominulous on the upper surface, while in general the venation is less obvious;

the costa is essentially straight rather than falcate, and the leaflets average broader. The inflorescence of *C. insularis* is coarser, longer, and with more numerous flowers than that of *C. falcata,* with more obvious pubescence throughout (the rachis in *C. falcata* being only faintly puberulent). The fully developed inflorescence-scales of *C. falcata* are only about 3 mm. long, and in other respects the inflorescence and floral parts seem to be much smaller than those of the new species, but the type of Gray's species is not sufficiently ample to permit detailed comparison.

The fruits are described from *Smith 843*, the other cited specimens being in flower.

**Cassia Tora** L. Sp. Pl. 376. 1753; Christoph. in Bishop Mus. Bull. **128**: 99. 1935.

VITI LEVU: Tholo North: Fatia, west of Tavua, alt. 60 m., *Degener 14981* (A) (low shrub to 1 m. high, in dry forested ravine). WITHOUT DEFINITE LOCALITY: *Seemann 135* (GH); *Harvey* (GH).

This widely distributed weed has apparently not previously been listed under the above name in literature pertaining to Fiji. The two early collections cited above were mentioned by Seemann (Fl. Vit. 67. 1865; 427. 1873) as *C. obtusifolia* L., generally considered synonymous with *C. Tora.*

**Crotalaria mucronata** Desv. in Jour. Bot. Desv. **3**: 76. 1814.

*Crotalaria striata* DC. Prodr. **2**: 131. 1825.

*Crotalaria Saltiana* sensu Prain ex King in Jour. As. Soc. Bengal **66**(2): **41** (Mater. Fl. Malay. Penin. **3**: 41). 1897; non Andr. (1811).

VITI LEVU: Lautoka: Mbekana Island, near sea-level, *Degener & Ordonez 15543* (A) (naturalized low shrub). KANDAVU: Namalata Isthmus region, near sea-level, *Smith 12* (NY) (subligneous herb to 2 m. high; petals yellow, purple-striped; weed in clearings; native name: *nggiringgiri*).

Although said to occur commonly enough in various other South Pacific groups, this weed has not previously been mentioned from Fiji. It has usually been listed in Pacific records as *C. Saltiana* Andr., which, as pointed out by Senn (in Rhodora **41**: 356. 1939), belongs to a different section of the genus and is apparently limited to Africa.

**Indigofera tinctoria** L. Sp. Pl. 751. 1753.

VITI LEVU: Lautoka: Lautoka, *Degener & Ordonez 13626* (A) (shrub to 1 m. high; roadside weed).

This species has not previously been reported from Fiji, although it is found in some other Pacific groups. A discussion of *I. tinctoria,* as compared with *I. suffruticosa* Mill. (*I. Anil* L.), is found in Merrill, Interpret. Herb. Amb. 264. 1917. Possibly some of the references in Pacific literature to *I. Anil* actually refer to *I. tinctoria.*

**Erythrina variegata** L. var. **orientalis** (L.) Merr. Interpret. Herb. Amb. 276. 1917; Christoph. in Bishop Mus. Bull. **128**: 103. 1935; Krukoff in Jour. Arnold Arb. **20**: 228. 1939.

MAKONDRONGA: *Degener & Ordonez 13803* (A) (tree about 8 m. high, with roots reaching into salt water along coast; seeds dark red).

The correct name for this plant has not previously been recorded in the special literature pertaining to Fiji, it having been mentioned by Seemann (Fl. Vit. 60. 1865) and others as *E. indica* Lam.

**Pueraria Thunbergiana** (Sieb. & Zucc.) Benth. in Jour. Linn. Soc. Bot. **9**: 122. 1867; Guillaumin in Jour. Arnold Arb. **12**: 245. 1931; Christoph. in Bishop Mus. Bull. **128**: 104. 1935.

VITI LEVU: Tholo North: Korovou, east of Tavua, alt. 60–150 m., *Degener 14942* (A) (vine, climbing over bushes and rocks in an isolated dry ravine; native name: *yaka;* root elongated, edible when cooked; stem used for tying temporary bundles). KAMBARA: *Smith 1268* (GH, NY) (vine, in thickets on limestone formation; petals rich pink).

Although it has been reported from the New Hebrides and from Samoa, among other Pacific groups, this widely distributed species is apparently new to Fiji.

## OXALIDACEAE

**Oxalis corymbosa** DC. Prodr. **1**: 696. 1824.

*Oxalis Martiana* Zucc. in Denkschr. Akad. Muench. **9**: 144. 1824.

VITI LEVU: Lautoka: Lautoka, *Greenwood 803* (GH) (in damp places about dwellings; flowers reddish purple).

This escape has not previously been reported from Fiji. The collector notes that it has appeared in the vicinity of Lautoka only during the past five years, but that he observed it in Suva about ten years ago.

## LINACEAE

**Durandea** Planch. in Hook. Lond. Jour. Bot. **6**: 594. 1847; op. cit. **7**: 527. 1848; Stapf in Hook. Ic. Pl. **29**: *pl. 2822.* 1906; Stapf in Kew Bull. **1908**: 11–14. 1908; Winkl. in Engl. & Prantl, Nat. Pfl. ed. 2. **19a**: 108. 1931. *Nomen conservandum propositum.*

*Durandea* Planch. is herewith proposed for conservation over *Durandea* Delarb. (Fl. Auv. ed. 2. 365. 1800), a name which has been used in connection with only one binomial and which is apparently referable to *Raphanus* L. (Cruciferae). Sixteen binomials have been referred to *Durandea* Planch., and in order to preserve these the generic name should be added to the list of *nomina generica conservanda.*

**Durandea vitiensis** Stapf in Hook. Ic. Pl. **29**: sub *pl. 2822.* 1906; in Kew Bull. **1908**: 13. 1908.

VITI LEVU: Serua: Near Mt. Ngamo, vicinity of Ngaloa, alt. 60 m., *Degener 15075* (A) (liana, in sunny forest; flowers dark yellow); Vatuvilakia, vicinity of Ngaloa, alt. 90 m., *Degener 15149* (A) (liana, in forest); Rewa: Vicinity of Suva, alt. 225 m., *MacDaniels 1161* (Bish) (scandent shrub, in rain-forest).

The rediscovery of this plant is of considerable interest, since it has previously been reported only from *Storck 4* (type coll., a duplicate being at GH), collected without definite locality and lacking fruits. The apparently nearly mature fruits of the Degener specimens are coriaceous, ellipsoid, up to 10 mm. long and 8 mm. broad, conspicuously 15-costate when dried, with 5 one-seeded bony pyrenes.

## MELIACEAE

**Dysoxylum pilosum** sp. nov.

? *Dracontomelon pilosum* Seem. Fl. Vit. 52. 1865.

Arbor ad 8 m. alta, ramis ramulisque crassis subteretibus juventute densissime cinereo-pilosis (pilis simplicibus patentibus circiter 1 mm. longis) demum glabrescentibus; foliis pinnatis alternatis ad 70 cm. longis, petiolo ad 12 cm. longo basi incrassato et rhachi leviter canaliculata ut ramulis densissime pilosis; foliolis subopppositis vel basim foliorum versus alternatis (13–) 17–23, petiolulis subteretibus pilosis 2–5 mm. longis, laminis papyraceis falcato-oblongis, (4–) 9–15 cm. longis, (2–) 2.5–4.5 cm. latis, basi inaequaliter obtusis vel subrotundatis, apice obtuse cuspidatis, margine integris, supra praeter nervos interdum pilosos glabris, subtus pilis 0.4–0.6 mm. longis simplicibus densissime et persistenter molliter pilosis, costa supra subplana vel leviter canaliculata subtus valde elevata, nervis

secundariis utrinsecus 8–20 patentibus marginem versus obscure anastomosantibus supra subplanis vel insculptis subtus valde prominulis, rete venularum immerso; inflorescentiis completis sub anthesi non visis sed ut videtur thyrsoideo-paniculatis, ramulis lateralibus brevibus rugulosis molliter pilosis, bracteis bracteolisque oblongo-deltoideis acutis 0.5–1 mm. longis; floribus numerosis sessilibus, calyce cupuliformi, circiter 1.5 mm. longo, 2–2.5 mm. diametro, extus pilis patentibus circiter 0.15 mm. longis dense pallide piloso, intus glabro, profunde lobato, lobis 4 late ovatis, circiter 1 mm. longis, 1.2–2 mm. latis, apice rotundatis vel obtusis; petalis 4 extus pallide puberulis intus glabris, 5–6 mm. longis, 1–1.2 mm. latis, tubo circiter 1.5 mm. diametro cohaerentibus, apicem versus liberis et apice acutis et leviter incurvatis; filamentis connatis, tubo cylindrico petala subaequante, basim versus corollam adnato, apice crenulato, extus dense pilosulo, intus glabro, antheris 8 sessilibus oblongis circiter 0.8 mm. longis intra tubum apicem versus inclusis; disco glabro cylindrico circiter 2 mm. longo apice crenulato; gynaecio corollam fere aequante, ovario ellipsoideo cum basi styli dense hirsuto, loculis 4, stylo carnoso, stigmate incrassato-capitato; inflorescentiis sub fructu 8–13 cm. longis, ramulis incrassatis longe persistenter molliter pilosis, fructibus coriaceis subglobosis ad 15 mm. diametro (vel maturitate majoribus?) demum glabris et conspicue rugosis, basi obtusis, apice rotundatis, pericarpio duro tenui, seminibus 3 vel 4 angulari-ellipsoideis circiter 8 mm. longis et 5–6 mm. latis.

VITI LEVU: Lautoka: Near Lautoka, *Greenwood 396* (A, TYPE, fl.), Aug. 28, 1922 (medium-sized tree); north of Lomolomo, alt. 90 m., *Degener & Ordonez 13715* (A, fr.) (coarse tree 8 m. high, on dry slope in a ravine of small jagged range of hills).

*Dracontomelon pilosum* Seem. is based upon a sterile specimen taken from a young plant. I remarked (in Bishop Mus. Bull. **141**: 87. 1936) that the two leaves of the type (*Seemann 100*, from Viti Levu) probably belong to a species of *Dysoxylum*. The more recent collections by Greenwood and Degener appear to bear out this supposition and I am reasonably sure that the plant here described as new is conspecific with *Dracontomelon pilosum*. This conclusion is based upon Seemann's description and my own recollection of the specimen at Kew. Nevertheless, since the Kew specimen cannot again be consulted at present, I am not prepared to say definitely that it is identical with my new species. I have deliberately used for this the same specific epithet which Seemann selected for his plant, so that, if future observation should verify my supposition, the transfer of the epithet from *Dracontomelon* to *Dysoxylum* will not be permissible and the Greenwood specimen will remain the type of the specific concept. Seemann describes his leaflets as being 5 pairs and about 6 cm. broad, but since his leaves were juvenile these observations may be of little value.

A member of the Section *Eudisoxylum, D. pilosum* resembles *D. Richii* (A. Gray) C. DC. in its inflorescence characters, differing only in the stouter flowers and the slightly denser pubescence of the petals. The new species is readily distinguished from *D. Richii* by the dense and persistent pubescence of the lower surfaces of its leaflets. In *D. pilosum* the pubescence of the inflorescence-branches persists in mature fruiting specimens, while in *D. Richii* the fruiting inflorescence is essentially glabrous. Both flowering and fruiting inflorescences of *D. pilosum* now available are considerably shorter than those of *D. Richii*, but this character may be of little consequence.

**Dysoxylum myriandrum** sp. nov.

Arbor 6 m. alta, ramulis crassis subteretibus rugosis juventute pilis simplicibus patentibus fuscis circiter 0.3 mm. longis densissime tomentosis demum glabratis; foliis pinnatis alternatis ad 40 cm. (vel ultra?) longis, petiolo ad 15 cm. longo supra complanato basi incrassato et rhachi ut ramulis primo densissime tomento-

sis; foliolis subopppositis 9–13, petiolulis gracilibus basi incrassatis 5–15 mm. longis ut ramulis tomentellis, laminis chartaceis vel subcoriaceis obovato-oblongis, 5.5–11 cm. longis, 3–5.5 cm. latis, basi inaequaliter obtusis, apice obtuse cuspidatis, margine integris et leviter recurvatis, supra glabris, subtus praeter costam et nervos secundarios primo dense et breviter strigosos glabris, costa supra subplana prominula subtus prominente, nervis secundariis utrinsecus 7–12 patentibus marginem versus obscure anastomosantibus supra leviter impressis subtus elevatis, rete venularum subimmerso; inflorescentiis completis non visis sed ut videtur paniculatis, rhachi ramulisque densissime et breviter pallido-pilosis, bracteis bracteolisque subcoriaceis late ovatis obtusis ad 1 mm. longis et 3 mm. latis extus sericeis intus glabris; pedicellis crassis (2.5–3 mm. diametro) 2–3 mm. longis cum calyce pilis circiter 0.2 mm. longis dense pallide sericeis; sepalis 5 ad basim liberis imbricatis subcarnosis late ovatis, 2–2.5 mm. longis, 3–4 mm. latis, intus glabris, apice rotundatis, obscure glandulosis; petalis 5 liberis carnosis imbricatis elliptico-oblongis, 9–11 mm. longis, 5–7 mm. latis, apice obtusis, extus ut sepalis dense sericeis, intus glabris; filamentis connatis, tubo libero carnoso cylindrico, 6–8 mm. longo, circiter 6 mm. diametro, apice crenulato, extus parce sericeo, intus glabro, antheris circiter 15 sessilibus oblongis circiter 2.5 mm. longis, basi et apice obtusis vel leviter emarginatis, intra tubum apicem versus inclusis; disco subcarnoso cylindrico circiter 2.5 mm. longo et 3 mm. diametro apice crenulato; gynaecio tubum subaequante, ovario conico pilis circiter 0.5 mm. longis dense stramineo-sericeo, loculis 5, stylo crasso carnoso, stigmate capitato circiter 2 mm. diametro.

VANUA LEVU: Thakaundrove-Mathuata boundary: Crest of Korotoni Range, between Navitho Pass and Mt. Ndelaikoro, alt. 650–900 m., *Smith 569* (GH, NY, TYPE), Nov. 21, 1933 (tree 6 m. high, in dense forest; petals and staminal tube pale green, brown-tinged; native name: *warokamithi*).

The cited specimen was originally distributed as *D. lenticellare* Gillespie, a species from which it is immediately distinguished by the pubescence of its leaf-rachis and the nerves of the lower surfaces of leaflets, as well as by its entirely different flowers. *Dysoxylum myriandrum* has no close relatives among species of the region, being characterized by the above-mentioned pubescence, the stout and densely sericeous flowers, and the unusually large number of stamens. To the best of my knowledge more than 10 stamens have not previously been reported in *Dysoxylum,* but on the basis of all its other characters the present species certainly belongs in that genus. In C. De Candolle's treatment of the genus (in DC. Monogr. Phan. **1**: 480–528. 1878), *D. myriandrum* keys to those few species of the Section *Didymocheton* with the staminal tube free, but among them it seems to have no close relatives.

**Aglaia vitiensis** A. C. Sm. in Bishop Mus. Bull. **141**: 80. *fig. 41.* 1936.

*Dysoxylum obliquum* Gillespie in Bishop Mus. Bull. **83**: 13. *fig. 15* (excl. *a-e*). 1931; not *Aglaia obliqua* White & Francis (1927).

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 750–900 m., *Gillespie 3757* (GH), *4316* (GH, type coll. of *Dysoxylum obliquum*), *Degener 14334* (A), *14666* (A); Namosi: Mt. Naitarandamu, alt. 1000 m., *Gillespie 3105* (GH).

Gillespie's species *Dysoxylum obliquum* was based upon a confused concept. *Gillespie 4316,* indicated as the type, is a specimen with comparatively small leaflets and narrow curved fruits. I have not seen all the other specimens cited by Gillespie, but his cited no. *3757* is clearly *A. vitiensis,* as is his no. *3105,* which he does not cite. As to the type itself, I believe that this may be safely considered conspecific with the type of *A. vitiensis,* in spite of its rather smaller leaflets and differently shaped fruit. Gillespie remarks that the specimen selected as the type of *Dysoxylum obliquum* has smaller leaves than the other cited specimens. The

specific epithet cannot be used in *Aglaia* because of the earlier *A. obliqua* White & Francis.

Among the other specimens cited by Gillespie as *Dysoxylum obliquum,* his no. *4161* does not belong here (i.e. to *Aglaia vitiensis*) and I have referred it to the following new species. The situation is further complicated by the fact that the flowers which Gillespie described and figured as representing *Dysoxylum obliquum* were taken from *Horne 316.* This specimen was elsewhere and correctly referred to *Dysoxylum lenticellare* Gillespie. Thus three species in two genera were used in drawing up the original description of *Dysoxylum obliquum,* but the name itself need be considered only in connection with the type.

*Aglaia vitiensis* has previously been known from Koro, Vanua Levu, and Taveuni. Its occurrence at middle and high elevations on all the larger volcanic islands of Fiji is to be anticipated.

**Aglaia axillaris** sp. nov.

Arbor gracilis ad 5 m. alta, partibus juvenilibus dense ferrugineo-lepidotis (squamulis in ramulis, rhachibus, petiolulis, et costis saepe persistentibus), ramulis subteretibus demum cinereis; foliis pinnatis ad 55 cm. longis, petiolis 4–10 cm. longis basi incrassatis cum rhachi leviter canaliculatis; foliolis subobpositis 9–13, inferioribus minimis, petiolulis 4–13 (–22) mm. longis, laminis chartaceis siccitate fusco-olivaceis oblongis vel elliptico- vel ovato-oblongis, (7–) 10–18 (–25) cm. longis, 3.5–8 cm. latis, basi obtusis et interdum inaequalibus, apice obtusis vel rotundato-cuspidatis, utrinque praeter costam interdum lepidotam glabris, costa supra subplana subtus prominente, nervis secundariis utrinsecus 9–15 (–18) patentibus subrectis supra subplanis subtus valde prominulis, rete venularum immerso; inflorescentiis axillaribus sub anthesi 1–3 cm. longis anguste paniculatis paucifloris ubique densissime ferrugineo-lepidotis, pedunculo et rhachi crassis, bracteis oblongis obtusis 2–4 mm. longis, bracteolis similibus sed minoribus, pedicellis subnullis; calyce sub anthesi circiter 3 mm. longo et summo diametro, tubo cupuliformi, lobis oblongo-deltoideis obtusis circiter 1.2 mm. longis et latis; petalis subcarnosis concavis elliptico-obovatis, 2.5–3.5 mm. longis, 1.5–2 mm. latis, apice rotundatis, apicem versus obscure pellucido-punctatis, extus ut calyce lepidotis; staminibus glabris, tubo textura petalis simili subgloboso-cylindrico circiter 2 mm. longo, apice obscure crenulato, antheris intra apicem tubi sessilibus oblongis 0.8–1 mm. longis; ovario breviter cylindrico lepidoto, stigmate carnoso capitato circiter 1 mm. diametro; fructibus dense et arcte ferrugineo-lepidotis, primo anguste oblongo-ellipsoideis et subfalcatis mox globoso-ellipticis, maturitate ut videtur ad 3 cm. longis et 2 cm. diametro, pericarpio tenui, seminibus 1–3 oblongo-ellipsoideis nigrescentibus rugulosis.

Viti Levu: Tholo North: Mt. Matomba, Nandala, vicinity of Nandarivatu, alt. 750 m., *Degener 14505* (A, type), Feb. 18, 1941 (slender tree 5 m. high, in dense forest; fruit orange-brown; native name: *sasawira*); Nauwanga, vicinity of Nandarivatu, alt. 750 m., *Degener 14689* (A) (small tree, in forest; native name: *mala*); vicinity of Nandarivatu, alt. 900 m., *Gillespie 4161* (GH).

*Aglaia axillaris* bears a superficial resemblance to *A. vitiensis* A. C. Sm., the two species being distinguished by the following characters:

Leaflets 9–13 (averaging 11); inflorescence short, not exceeding 3 cm. (averaging 1–1.5 cm.) in length at anthesis, very compact in fruit and often borne on defoliate branchlets; calyx-lobes oblong-deltoid, about 1.2 mm. long; filament-tube about 2 mm. long, the anthers included within it ..... *A. axillaris.*

Leaflets 5–9 (averaging 7); inflorescence loosely paniculate, up to 10 cm. long at anthesis, often shorter in fruit due to disarticulation, apparently associated with the leaves; calyx-lobes broadly ovate, about 0.7 mm. long; filament-tube about 1 mm. long, obviously exceeded by the anthers ..... *A. vitiensis.*

In addition, certain intangible characters can be used to separate the two species; *A. axillaris* has a tendency toward shorter petiolules and its distal leaflets tend to be narrower and more obviously oblong. The difference in staminal arrangement is such that the two species fall into different series, as these are generally recognized, *A. axillaris* into *Euaglaia* and *A. vitiensis* into *Hearnia*. Their similarity in other aspects indicates that they are more closely allied than this would indicate.

**Aglaia Archboldiana** sp. nov.

Arbor, ramulis crassis teretibus densissime ferrugineo-stellato-tomentosis (pilis multiramulosis, ramulis e pelta parva orientibus, nonnullis 0.7–1.3 mm. longis, reliquis brevissimis, omnibus demum saepe descitis, pelta persistente et ut videtur multiciliata); foliis pinnatis ad 60 cm. longis, petiolis 12–18 cm. longis basi incrassatis cum rhachi subteretibus ut ramulis dense stellato-tomentosis; foliolis oppositis vel subalternatis plerumque 7 raro 5, petiolulis tomentosis leviter canaliculatis crassis, lateralibus 7–15 mm. longis, laminis chartaceis elliptico- vel obovato-oblongis, (10–) 15–25 (–35) cm. longis, 5–10 (–14) cm. latis, basi obtusis et interdum inaequalibus, apice cuspidatis vel breviter acuminatis, margine integris vel undulatis et leviter recurvatis, supra glabris vel in sulcula costae obscure tomentellis, subtus pilis ut eis ramulorum densissime tomentosis, costa supra leviter canaliculata subtus prominente, nervis secundariis utrinsecus (12–) 15–25 rectis patentibus marginem versus abrupte curvatis supra subplanis vel leviter insculptis subtus valde elevatis, rete venularum immerso vel subtus prominulo; inflorescentiis apicem ramulorum versus axillaribus anguste paniculatis sub anthesi ad 4 cm. (vel ultra?) longis paucifloris ubique dense stellato-tomentellis (pilis ut eis ramulorum ad 1 mm. longis plerumque brevioribus), pedunculo brevi et rhachi crassis, bracteis lineari-oblongis ad 4 mm. longis; floribus sessilibus vel breviter pedicellatis, pedicellis crassis sub anthesi articulatis, bracteolis sub anthesi 3 vel 4 lineari-lanceolatis 2–4 mm. longis; calyce cupuliformi sub anthesi circiter 3.5 mm. longo et summo diametro, lobis ovato-deltoideis subacutis circiter 1.2 mm. longis et 2 mm. latis intus glabris; petalis subcarnosis concavis utrinque glabris elliptico-oblongis, circiter 2 mm. longis, 1.2–2 mm. latis, forsan maturitate majoribus, margine anguste scariosis; staminibus glabris 1.5–2 mm. longis, filamentis in tubo crasse carnoso 1–1.5 mm. longo connatis, antheris inflexis in margine tubi sessilibus deltoideo-oblongis circiter 0.8 mm. longis; ovario breviter cylindrico dense stellato-tomentello, basi stylorum conico glabro, stylis 2 apice distinctis; inflorescentiis sub fructu ad 10 cm. longis, tomento longe persistente, ramulis pedicellisque valde incrassatis, sepalis persistentibus; fructibus dense et arcte ferrugineo- vel cinnamomeo-stellato-tomentellis, maturitate elliptico-subglobosis 2–3 cm. diametro, pericarpio tenui, seminibus 2–4 complanato-ellipsoideis siccitate valde rugulosis.

Viti Levu: Serua: Vicinity of Ngaloa, *Degener & Ordonez 13705* (A, type), Nov. 29, 1940 (tree, in forest); Tholo North: Mt. Matomba, Nandala, vicinity of Nandarivatu, alt. 750 m., *Degener 14506* (A) (tree, in dense forest; fruit light brown; native name: *sasawira*).

*Aglaia Archboldiana* is readily distinguished from other Fijian species by the long stellate tomentum of its leaves, inflorescence-branches, and calyces. In the type collection, bearing quite mature fruits, this tomentum persists. The second specimen cited is still more mature, and here the tomentum is reduced to scattered (but still profuse) stellate hairs with frequently broken branches. Other Fijian species which have this type of tomentum to a limited extent are *A. basiphylla* A. Gray, *A. Greenwoodii* A. C. Sm., and the following new species, but these all have small leaflets and small fruits and are only very distantly related to *A.*

*Archboldiana*. A species of the Section *Hearnia, A. Archboldiana* resembles *A. vitiensis* A. C. Sm. in its staminal characters, but otherwise the two species are not closely related.

**Aglaia fragilis** sp. nov.

Arbor gracilis 3 m. alta, ramulis teretibus juventute pilis circiter 0.5 mm. longis densissime ferrugineo-stellato-tomentellis demum cinereis glabrescentibus; foliis pinnatis raro unifoliolatis ad 15 cm. longis, petiolis 1–3 cm. longis cum rhachi gracilibus subteretibus ut ramulis tomentellis; foliolis subopppositis 3 vel 5 (raro ad 1 reductis), petiolulis tomentellis subteretibus lateralibus 2–3 mm. longis terminalibus longioribus, laminis chartaceis vel papyraceis anguste elliptico-oblongis, 3–8 (terminalibus ad 11) cm. longis, 1.5–3.3 cm. latis, basi obtusis vel rotundatis, apice obtusis, margine integris et leviter recurvatis, supra glabris, subtus pilis ut eis ramulorum persistenter pilosis, costa supra leviter canaliculata subtus prominente, nervis secundariis utrinsecus 5–8 in foliolis lateralibus (12–16 in foliolis terminalibus) rectis marginem versus obscure anastomosantibus supra subplanis subtus prominulis, rete venularum obscuro; inflorescentiis axillaribus laxis paniculatis sub anthesi ad 7 cm. longis ubique dense stellato-tomentellis (pilis ad 0.5 mm. longis plerumque minoribus), pedunculo brevi et ramulis gracilibus, bracteis oblongis circiter 1 mm. longis, bracteolis minoribus, pedicellis gracilibus 2–5 mm. longis; calyce fere ad basim lobatis, lobis submembranaceis anguste oblongis obtusis, circiter 1.5 mm. longis et 0.6 mm. latis, intus glabris; corolla subglobosa, petalis subcarnosis concavis oblongo-ellipticis, 2–2.5 mm. longis, 1–1.5 mm. latis, apice rotundatis, extus dense stellato-pilosis vel sublepidotis, intus glabris; staminibus circiter 1.5 mm. longis glabris, filamentis in tubo crasse carnoso 1–1.2 mm. longo connatis, antheris inflexis in margine tubi sessilibus deltoideo-oblongis circiter 0.7 mm. longis; ovario ellipsoideo-ovoideo sub anthesi circiter 0.7 mm. longo dense stellato-puberulo, columna stylorum glabra ovarium subaequali apicem versus incrassata, stigmatibus obscuris.

VITI LEVU: Tholo North: Nauwanga, vicinity of Nandarivatu, alt. about 750 m., *Degener 14680* (A, TYPE), Mar. 6, 1941 (leafy tree about 3 m. high, in forest).

*Aglaia fragilis* is very distinct among Fijian species, characterized by the conspicuous and apparently persistent pubescence of its inflorescences, lower surfaces of leaflets, etc., by its lax and ample inflorescences, and by the fact that its few lateral leaflets are conspicuously smaller than the terminal one. A member of the Section *Hearnia,* it suggests by its pubescence *A. Greenwoodii* A. C. Sm., but that species has soon glabrescent leaflet-blades, usually 7–9 subequal leaflets, and a very compact inflorescence with much shorter pedicels.

## POLYGALACEAE

**Polygala paniculata** L. Amoen. Acad. **5**: 402. 1759; Setchell in Carnegie Inst. Publ. **341**: 79. 1924; Christoph. in Bishop Mus. Bull. **128**: 117. 1935.

VITI LEVU: Tholo North: Nandarivatu, alt. about 800 m., *Degener & Ordonez 13540* (GH) (garden weed), *Reay 24* (GH); Sovutawambu, near Nandarivatu, alt. 750 m., *Degener 14591* (GH) (very common among grasses and weeds); Nandronga: Singatoka River, *Greenwood 461B* (GH) (common on dry hillsides); Rewa: Suva, *Degener & Ordonez 13511* (GH) (in clay near shore, along roadside); Naitasiri: Nasinu, alt. 150 m., *Gillespie 3420* (NY) (common weed). KANDAVU: Hills above Namalata and Ngaloa Bays, alt. 200–400 m., *Smith 103* (NY) (common on edge of forest).

The lack of older collections indicates that this common weed is probably of recent introduction in Fiji. Although the species is known from other Pacific groups, I believe this to be the first record of the family from Fiji.

## EUPHORBIACEAE

By L. Croizat

**Phyllanthus urinaria** L. Sp. Pl. 982. 1753; Muell. Arg. in DC. Prodr. **15**(2): 364. 1866; Benth. Fl. Austr. **6**: 102. 1873; Hook. f. Fl. Brit. Ind. **5**: 293. 1887; Merr. in Philip. Jour. Sci. Bot. **9**: 105. 1914; Kaneh. in Jour. Dept. Agr. Kyushu Univ. **4**: 354. 1935.

Viti Levu: Tholo North: Nandarivatu, *Greenwood 789A* (A).

The species, which is here first recorded from Fiji, is probably more common in the Pacific than literature indicates. It is easily separated from all other herbaceous species of *Phyllanthus* (e.g. *P. Niruri* L.) by its muricate or papillose capsules, sessile flowers, angled stems, and sharp primaries. The leaf often has a peculiar metallic texture.

**Glochidion amentuligerum** (Muell. Arg.) Croizat, comb. nov.

*Phyllanthus amentuliger* Muell. Arg. in Linnaea **48**: 390. 1865; in DC. Prodr. **15**(2): 313. 1866; Seem. Fl. Vit. 219. 1867.

Vanua Levu: Thakaundrove: Eastern drainage of Yanawai River, *Degener & Ordonez 14115* (A); Natewa Bay region, *Smith 1926* (GH).

*Glochidion amentuligerum* is close to *G. anfractuosum* Gibbs, but has the lower leaf-surface manifestly glaucescent or grayish and the veins fairly thickly puberulent under a lens; *G. anfractuosum* is not glaucescent and is very sparingly hairy at the midrib with very short substrigose trichomes.

**Glochidion Gillespiei** Croizat, sp. nov.

*Glochidion Manono* sensu Gillespie in Bishop Mus. Bull. **91**: 16. *f. 17.* 1932; non Baill.

Arbuscula glabra; foliis 7–11 cm. longis, 3–5.5 cm. latis, cuspidato-lanceolatis vel ovato-cuspidatis subtus glaucescentibus, nervis totis conspicuis; inflorescentiis axillaribus cymulosis; perianthio ♂ ca. 2 mm. longo, 2–4 mm. fauce lato, lobis 6 late imbricatis; perianthio ♀ 3 mm. longo, lobis 6 erectis valde costatis, interdum anisomeris ca. 3 mm. longis, pedicello 2–3 mm. longo, stylo valido clavato ad 5 mm. longo apice subtrifido, stigmatibus haud patentibus; ovario ut videtur 3-loculari.

Viti Levu: Namosi: Naitarandamu Mt., summit, alt. 1200 m., *Gillespie 3161* (GH, type), Sept. 1927.

Gillespie's illustration of this new species, under the name of *G. Manono,* is excellent. *Glochidion Manono* Baill. (as represented by *Lépine 210* and *U. S. Expl. Exped.*) is an altogether different plant, despite the similarity of the descriptions. I have seen no authentic Fijian records of *G. Manono* and believe that the record based upon the cited Exploring Expedition collection is an error, because Baillon's species, either in its typical form or its varieties, is apparently not found west of Samoa. Gillespie (l. c. 16) suggests that the extraordinary development of the stylar column of his plant is probably due to the parasitism of a fungus. This is not likely to prove correct, as many species of *Glochidion* (e.g. *G. Daltonii* Kurz) have a style fully as well developed as that of *G. Gillespiei.*

**Glochidion calciphilum** Croizat, sp. nov.

Arbuscula vel frutex contortus 1-metralis, innovationibus fere glabris, i.e. pilis perpaucis hic inde ad apicem obsitis, cortice griseo vel olivaceo-brunneo levi; foliis totis pallescentibus firme chartaceis subconcoloribus dimorphicis, aliis eximie rotundatis vel obovato-rotundatis apice subtruncato-rotundatis ad 2 cm. longis latisque, aliis ellipticis vel lanceolato-ellipticis, interdum falcatis basi anisomeris, 4–7 cm. longis, 2–4 cm. latis, venis primariis utrinque ca. 4–5-jugis, petiolo ruguloso ca. 0.5 cm. longo; stipulis triangularibus parvis margine sub lente acri interdum ciliatulis; inflorescentiis axillaribus ut videtur paucifloris; flore ♂: peri-

anthio ca. 2 mm. longo et lato extus puberulo, pedicello gracili ca. 4 mm. longo, lobis 6 oblanceolatis valde costatis ca. 1.5 mm. longis, 0.75 mm. latis, columna staminali 3-antherifera ad 1 mm. longa; flore ♀: perianthio puberulo arcte cyathiformi ad 2 mm. longo, lobis 5 vel 6 interdum leviter anisomeris ciliatulis obovato-ellipticis, 0.75–1.25 mm. longis, 0.75–0.5 mm. latis; ovario glaberrimo depresso-globuloso ca. 1 mm. magno, columna stylari pro ovarii magnitudine valida ad 1 mm. longa ellipsoidea, stigmatibus 5 apice liberis leviter divaricatis glaberrimis; fructu ca. 2 cm. lato et 1 cm. longo ut videtur 7- vel 8-loculari glabro.

KAMBARA: *Smith 1279* (GH) (compact shrub 1 m. high, on bare limestone; native name: *molau*). FULANGA: *Smith 1217* (GH, TYPE), Feb. 26, 1934 (gnarled tree 1 m. high, on lagoon cliff in limestone formation).

The structure of the stylar column readily separates this species from *G. concolor* Muell. Arg. The long and slender pedicel of the pistillate flower is unlike that of *G. amentuligerum* (Muell. Arg.) Croizat and *G. anfractuosum* Gibbs. The material at hand is not sufficient to establish the affinities of the new species, but it is not related to *G. Manono*.

**Glochidion concolor** Muell. Arg. in Linnaea **32**: 62. 1863; Seem. Fl. Vit. 219. 1867.
*Phyllanthus concolor* Muell. Arg. in DC. Prodr. **15**(2): 290. 1866.

This binomial has been disregarded since 1867 and its reinstatement demands a brief comment. *Harvey s. n.* (in 1855), an isotype of *G. concolor,* is very close to *Gillespie 4412* and *Degener 14298, 14587,* and *15164,* all from Fiji, and it cannot definitely be separated from a specimen of *Parks 16030* from Eua, Tonga. Some of these specimens have been identified in herbaria as *G. ramiflorum* Forst. f., and the evidence from the literature indicates that they indeed answer the concept of that species held by writers on the Pacific flora.

Whether these specimens are ultimately to be treated under *G. concolor* or *G. ramiflorum* cannot be decided at present, because the type material of Forster's species is probably a mixture of two or more species. The later record of the species does not include a description, merely referring to the diagnosis and figures of the generic description, which is unsatisfactory for specific identification. The type localities are two under the technical publication of the binomial, the Society Islands and the New Hebrides, but only one, Tanna, is later indicated (Forst. f. Fl. Ins. Austr. Prodr. 92. 1786). Thus, Tanna should be accepted as the *locus classicus*.

It is probable that *G. tannaense* Guillaumin (in Jour. Arnold Arb. **13**: 90. 1932) is actually the same as the Tanna specimen of *G. ramiflorum;* Guillaumin (l. c.) remarks, "Could this be the *Glochidion* sp. found on Tanna by Forster?" The type collection of *G. tannaense* differs but slightly, if at all, from certain pubescent forms of the Fijian plant. Mueller Argoviensis typifies *G. ramiflorum* (as *Phyllanthus ramiflorus* var. *genuinus,* in DC. Prodr. **15**(2): 289. 1866) with reference to the Forster specimen from the Societies and not the one from the New Hebrides. To judge by a specimen verified by Mueller himself, it is not improbable that he understood as *P. ramiflorus* var. *genuinus* the entity from Raiatea published as *G. emarginatum* by Moore (in Bishop Mus. Bull. **102**: 30. 1933).

In view of the constant confusion of various plants under the name *G. ramiflorum,* the following outline of distribution is suggested pending a critical study of the entire genus in the Pacific:

(1). *Glochidion ramiflorum* is typified by a plant from Tanna, which is probably conspecific with that described by Guillaumin as *G. tannaense*. This species

is very close to that of Fiji and may be conspecific with *G. concolor* Muell. Arg. The complex of *G. ramiflorum* may extend as far east as Tonga.

(2). Mueller Argoviensis errs in typifying *G. ramiflorum* with reference to a plant from the Societies. This plant is apparently close to *G. Manono* and may prove to be the same as *G. emarginatum*.

(3). In the present state of our knowledge, the range of *G. ramiflorum* cannot be extended east of Samoa, and it is doubtful whether Forster's species occurs eastward beyond Tonga.

**Glochidion marquesanum** (F. Brown) Croizat, comb. nov.

*Glochidion ramiflorum* var. *marquesanum* F. Brown in Bishop Mus. Bull. **130**: 144. *f. 22, a-e.* 1935.

This new combination should not be delayed, in view of the above discussion. Brown's entity has certainly little to do with the Tanna material of Forster, and hardly anything in common with the material from the Societies mistakenly used by Mueller to typify Forster's concept.

**Breynia disticha** Forst f. var. **typica** Muell. Arg. f. **nivosa** (W. G. Smith) Croizat, comb. nov.

*Phyllanthus nivosus* W. G. Smith in Flor. Mag. n. s. **13**: *pl. 120.* 1874; Sherff in Field Mus. Publ. Bot. **17**: 568. 1939.

*Phyllanthus roseo-pictus* Hort. ex Reg. in Gartenfl. **28**: 19. 1879.

*Breynia nivosa* Small in Bull. Torrey Bot. Club **37**: 516. 1910; Setch. in Univ. Cal. Publ. Bot. **12**: 187. 1926; Wilder in Bishop Mus. Bull. **86**: 66. 1931; Christoph. in Bishop Mus. Bull. **128**: 120. 1935; F. Brown in Bishop Mus. Bull. **130**: 137. 1935.

*Breynia nivosa* var. *roseo-picta* F. Brown in Bishop Mus. Bull. **130**: 137. 1935.

*Breynia* J. R. & G. Forst. is illegitimate on two counts. It is a later homonym of *Breynia* L. (Sp. Pl. 503. 1753) and a *nomen confusum,* a mixture of *Breynia* sp. and *Phyllanthus distichus* L., which was rejected by both A. de Jussieu (Tent. Euph. 22. 1824) and Baillon (Et. Gén. Euph. 633. 1858). Consequently *Breynia* J. R. & G. Forst. is here retained as a *nomen genericum conservandum propositum.* If its conservation is not upheld, the valid name will be *Melanthes* Bl. (corrected from *Melanthesa* Bl. in Bl. & Fisch. Fl. Jav. **1**: vii, *in not.* 1828). It should be noted that *Melanthes* already has legitimate status in nomenclature as *Breynia* Sect. *Melanthes* [*Melanthesa*] Baill. (in Adansonia **6**: 344. 1866).

The reduction of *Breynia* under *Phyllanthus* as proposed by Sherff hardly deserves mention, as the two genera are distinct and have so been treated for over a century.

Abundant material of *B. disticha* var. *neocaledonica* Muell. Arg. is available for comparison (*Vieillard 1195, Franc 1645, 1645a,* and *2117*). The foliage of this plant is usually smaller than that of the Snowbush Breynia, but all other characters are practically the same in the two entities. Thus it appears most probable that this well known ornamental belongs to var. *genuina,* of which it is a form verging on the *lusus,* the variegations of the leaves changing endlessly even on the same plant. The possibility that the Tongatabu specimen of *B. oblongifolia* cited by Mueller Argoviensis (in DC. Prodr. **15**(2): 440. 1866) might belong to *B. disticha* is not to be excluded, since a specimen of the Snowbush Breynia, *Wood 1159* (A), exhibits some long and narrow leaves which appear to match the foliage of *B. longifolia.*

The plant upon which W. G. Smith described and figured *P. nivosus* is stated in the publication to have come from the New Hebrides and to have been culti-

vated by W. Bull of Chelsea, England. The parenthetic authorship "Bull." or "Bulliard," given by various authors, is an error.

The new combination is exemplified by the following material: *Degener & Ordonez 13667* (A) and *Greenwood 727B* (A) from Viti Levu, Fiji, *Jack 4425* (A) from Cuba, and *Croizat* (A).

**Drypetes vitiensis** Croizat, sp. nov.

Arbor 6-metralis, innovationibus adultioribus atro-brunneis conferte albido-lenticellatis, apice parcius hispidulis glabratisve subtus glaberrimis; foliis more generis in sicco olivaceo-discoloribus, firme chartaceis, glaberrimis, integerrimis, oblongo-ellipticis vel ovato-ellipticis, apice latissime acuminatis vel subrotundatis, basi rotundatis leviter anisomeris, 3–7 cm. longis, 2–5 cm. latis, venis gracilibus et subtus perspicuis late patentibus vel adscendentibus saepius furcatim anastomosantibus, ca. 5–7-jugis, venulis irregulariter reticulatis valde delicatis subobscurisve, petiolo ruguloso 10–15 mm. longo; stipulis obsoletis; fructu tantum viso: pedicello 5–7 mm. longo lenticellato saepius rigidulo porrecto, perianthio sub fructu elobato vix 2 mm. lato, fructu immaturo habitu subbaccato olivaceo, pilis albidis paucis ad basim induto, caeterum glabro, ad 15 mm. longo et 7 mm. crasso, stylis nigro-brunneis 2–3 depressis, more generis vix 1.5 mm. longis latisque.

VITI LEVU: Ra: Vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15430* (A, TYPE), June 3, 1941 (in dry forest; fruit red; native name: *meme*).

I know of no other species with which this may be compared. The genus *Drypetes* is emphatically suggested by the characters of the fruit and the placentation. Prof. I. W. Bailey, who has kindly studied the wood of this plant, reports that its structure in all probability indicates that a species of *Drypetes* is represented. The genus is new to Fiji. A peculiarity worthy of note is the presence of a pair of glands near the hilum on the aril of the immature seed.

**Claoxylon parvicoccum** Croizat, sp. nov.

Arbuscula patens 4–10 m. alta; innovationibus parcius puberulis; foliis in sicco subconcoloribus olivaceis, junioribus interdum hic inde vinosis, ovato- vel obovato-ellipticis glabris vel glabratis, apice breviter acuminatis, basi longe cuneatis vel cuneato-rotundatis, margine sub lente crenato-denticulatis vel glanduloso-dentatis, 7–17 cm. longis, 3–9 cm. latis, venis adscendentibus ca. 5-jugis anastomosantibus valde obscuris; petiolo herbaceo puberulo 2–6 cm. longo, saepius vinoso, apice glandulis 2 sat inconspicuis ornato; stipulis glandulosis parvis; inflorescentiis spicatis vel subracemosis, gracilibus ad 8 cm. longis; perianthio ♂ ca. 4 mm. magno, pedicello 1 mm. longo, lobis 3 ca. 2 mm. longis et 1 mm. latis, staminibus ca. 25–35; perianthio ♀ ca. 1 mm. longo et 2 mm. lato, pedicello articulato vix 0.8 mm. longo, petalis 3 ovato-rotundatis ca. 0.3 mm. magnis, sepalis totidem ac petalis ca. 1 mm. longis et 1.5 mm. latis rotundatis; ovario perianthium longe excedente, parte ejus libera 1–1.5 mm. longa, ca. 2 mm. lata, stylis 3 minimis vix 0.25 mm. longis.

KORO: Eastern slope of main ridge, alt. 200–300 m., *Smith 1005* (GH) (tree 10 m. high, in forest). VANUA LEVU: Mbua: Southern portion of Seatovo Range, alt. 100–350 m., *Smith 1520* (GH) (spreading tree 4 m. high, at edge of forest; native name: *vakatharendavui*); Thakaundrove: Maravu, vicinity of Salt Lake, *Degener & Ordonez 14172* (A). TAVEUNI: Vicinity of Wairiki, alt. 200 m., *Gillespie 4641* (GH, TYPE), Feb. 1928.

TONGA: EUA: Old Parker plantation, *Parks 16262* (A).

Gillespie has pertinently pointed out (in Bishop Mus. Bull. **91**: 14. 1932) that the characters of the staminate flower used by Mueller and by Pax and Hoffmann to key out the sections and species of *Claoxylon* are not reliable. Not all the genera of the Euphorbiaceae can be identified on the basis of pistillate flowers (e.g. *Phyllanthus,* which usually proves unworkable when staminate flowers are

lacking), but *Claoxylon,* like *Croton,* is clearly to be worked out first and foremost on the pistillate structures. Speciation by alterations taking place in the pistillate flower seems to be as widespread and as definite in *Claoxylon* as it is in *Croton.*

*Claoxylon vitiense* Gillespie is an excellent species, with essentially oblong leaves that are much longer than broad and with the young parts thickly velutinous, the indument being generally brownish. The leaves tend to be softly pubescent beneath and the styles are well-developed in relation to the size of the ovary, papillose, and spreading-recurved. Gillespie's illustration (in Bishop Mus. Bull. **91**: *f. 14.* 1932) of the habit fails to convey the impression which is gathered from such specimens as *Gillespie 2600* (GH), *2999* (GH), and *3280* (GH), *Degener & Ordonez 13770* (A), and *Degener 15203* (A), all from Viti Levu. *Claoxylon fallax* Muell. Arg. is also a good species, as represented by *Seemann 394* (GH) and *Tabualewa 15598* (A), with a rather thinly velutinous new growth and leaves tending to be ovate to obovate, on the whole perhaps a trifle larger than those shown by Gillespie in his illustration of *C. vitiense,* but otherwise very much like them. It appears to be very difficult, if indeed possible, on the basis of foliage to distinguish between certain states of the species and of *C. fallax.* Gillespie is probably correct in treating as *C. fallax* such specimens as *Gillespie 3477* and *3565; Gillespie 2213,* in fruit, seems also to belong here.

*Claoxylon parvicoccum* differs from *C. fallax,* with which it can easily be confused at a first glance, in the following features: (1) the ovary is about 3 mm. broad and the style not less than 2 mm. long in *C. fallax* (interpreted from *Tabualewa 15598*), while the ovary in *C. parvicoccum* is only 2 mm. broad and the styles barely 0.25 mm. long; (2) the ovary is heavily hispidulous and light yellow in *C. fallax,* sparingly setulose and wine-colored or pink in *C. parvicoccum;* (3) the perianth-lobes (sepals) are broadly ovate to triangular and more or less acuminate in *C. fallax,* nearly transversely oblong and much rounded in *C. parvicoccum;* and (4) the petals are much smaller by comparison with the sepals in *C. fallax* than they are in *C. parvicoccum.* These characters, taken jointly, manifestly separate the pistillate flowers of the two species. The Tonga record cited above is established on poor material and requires further confirmation.

**Claoxylon Archboldianum** Croizat, sp. nov.

Frutex vel arbuscula; innovationibus valde herbaceis, apice summo glabrescentibus vix setulosis; foliis in sicco olivaceis vel vinoso-olivaceis, 5–10 cm. longis, 2–4.5 cm. latis, lanceolatis vel ovato-lanceolatis vel oblanceolatis, apice acuminatis, basi cuneatis, margine plus minusve repandulo-dentatis, supra glabris subtus glabratis glabrisve, venis adscendentibus ca. 5-jugis; petiolo 1–4 cm. longo, ad laminae radicem ipsam glandulis 4 antice instructo; stipulis glandulosis subnullis; inflorescentiis gracilibus spicatis ad 4 cm. longis; floribus ♂ ignotis; floribus ♀: perianthio 2.5 mm. lato, 1 mm. longo, pedicello articulato cum pedunculo ca. 2.5 mm. longo, lobis 3 late triangularibus ad 2 mm. latis et 1 mm. longis, apice acutato saepius subcallosis, petalis nullis at disco hypogyno glanduloso inter lobos petali modo incrassato; ovario pyramidato vix setuloso ca. 1.5 mm. longo, stylis 3 patentibus papillosis ad 1 mm. longis integris; capsula fragili tricocca vinosa glabrata ad 3 mm. longa et 5 mm. lata, semine subgloboso-compresso ca. 3 mm. magno, arillo tenui vinoso, testa valde rugoso-asperata.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 750–900 m., *Degener 14906* (A, TYPE), Mar. 26, 1941. VANUA LEVU: Mbua: Mbua Bay, *U. S. Expl. Exped.* (GH, probably only in part).

At first sight it is easy to mistake *C. Archboldianum* for *C. echinospermum,* but the new species differs from Mueller's entity (based on *U. S. Expl. Exped.* from Ovalau) in having leaves which are much more deeply repand-serrate, petals which are replaced by glands fusing with the disc, a less definitely trigonous fruit with blunter keels, and the epicarp practically glabrous (very sparingly setulose under a lens) and of a vinous color rather than appressed-velvety-setulose and yellow. In addition, the seed of *C. Archboldianum* is merely rugose, while it is definitely asperate in *C. echinospermum.* These differences point to entities which are not conspecific, showing that *Claoxylon,* like *Croton,* speciates mainly in the pistillate flower and the fruit.

**Claoxylon sitibundum** Croizat, sp. nov.

Arbuscula 3–5 m. alta; innovationibus parcius setulosis in ramos graciles cicatricosos abeuntibus; foliis in sicco brunneis vel olivaceis glabris, costa venisque interdum vinosis, 4.5–7 cm. longis, 2–3 cm. latis, lanceolatis vel oblanceolatis, habitu verticillatis, apice plus minusve acuminatis, basi longe cuneatis, margine repando-dentatis, venis sat obscuris adscendentibus ca. 6-jugis; petiolo 1–1.5 cm. longo setuloso vel glabrato vinoso canaliculato in laminam confluente, apice antice denticulis vel glandulis 2–4 ornato; stipulis triangularibus minutis; inflorescentiis simplicibus spicatis 4 cm. longis vel brevioribus; floribus ♂ ignotis; floribus ♀: perianthio 3-lobato, ca. 0.75 mm. longo et 1.5 mm. lato, lobis triangulari-ovatis costulatis, petalis saturate vinosis subnigris vel nigris, late rotundatis, lobis subaequilongis; ovario globuloso nigricanti parcissime setuloso ca. 1.5 mm. magno, vix tertio infero in perianthio incluso, stylis 3 nigricantibus revolutis vix 0.5 mm. longis; capsula nigricanti ca. 3.5 mm. lata et 2.5 mm. longa, seminibus complanatis, ambitu rotundatis, arillo nigricanti vel saturato-vinoso, ca. 2.5 mm. latis, vermiculato-rugosis.

VITI LEVU: Ra: Vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15460* (A, TYPE), June 6, 1941 (in dry rocky forest).

This is another species which can easily be confused with *C. echinospermum* and *C. Archboldianum,* of which it suggests a depauperate form with slender branchlets and verticillate leaves. It differs from the former in the small blackish capsule, the short inflorescence bearing usually a single apical pistillate flower, the smaller and differently sculptured seed, and in every detail of the perianth. It can be separated from *C. Archboldianum* by the smaller lenticular seed, the shape of the perianth-lobes, the presence of petals rather than glands in the flower, the inflorescence, and the leaves, which are broader in relation to their length.

A group of species of close relationship, with a range extending from the Dutch East Indies to Polynesia, contains *C. echinospermum* Muell. Arg., *C. taitense* Muell. Arg., *C. erythrophyllum* Miq., *C. affine* Zoll., *C. samoense* Pax & Hoffm., *C. Archboldianum* Croizat, and *C. sitibundum* Croizat.

**Cleidion Degeneri** Croizat, sp. nov.

Frutex vel arbuscula 2-metralis, innovationibus adpresse griseo-setulosis, citissime glabris, cortice griseo vel griseo-brunneo, cicatricibus foliorum delapsorum bene notato; foliis tenellis subtus praesertim parcius hispido-setulosis mox glabratis vel glabris, in sicco atro-olivaceis vel olivaceo-discoloribus, lanceolatis vel elliptico-lanceolatis chartaceis, apice brevius acuminatis, acumine mucronulato, basi plus minusve truncato biauriculatis, margine ratione varia dentato-serratis vel obscure serratis, serraturis incurvis glandulosis, 3–10 mm. inter se distantibus, 6–12 cm. longis, 2–5 cm. latis, venis adscendentibus ca. 7-jugis; inflorescentiis ♂ simplicibus habitu spicatis, ad 7 cm. longis, gracilibus, ♀ cymosis vel subpanicu-

latis, pedunculo communi gracillimo axillari ad 4 cm. longo, pedicellis ca. 5–10 subcapillaceis ad 1.5 cm. longis; floribus ♂ in cymis plurifloris congestis, perianthio ut videtur 3-lobato ad 3 mm. longo et lato, pedicello 1.5 mm. longo, staminibus ultra 20 pulvinatim aggregatis; floribus ♀: perianthio 3-fido in pedicellum more generis abeunte, lobis subsetaceis 2–3 mm. longis, puberulis glabratisve, ovario ut videtur 3-loculari ca. 1.5 mm. magno minute griseo-puberulo levi, stylis 3 habitu lentis, basi 0.3 mm. connatis, dein partitis, cruribus subulatis integerrimis, puberulo-papillosis, colore plus minusve vinosis, ad 14 mm. longis, fructu immaturo capsulari ad 4 mm. longo et 7 mm. crasso, levi, coccorum dorso plus minusve costulato.

VITI LEVU: Tholo North: Vicinity of Tavua, alt. 30–150 m., *Degener 14962* (A) (shrub 1–2 m. high, in isolated dry forested ravine; fruit whitish); Ra: Vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15505* (A); Tholo West: Mbuyombuyo, near Namboutini, *Tabualewa 15570* (A, TYPE), June 17, 1941 (shrub or small tree 2 m. high).

Of this genus, only *C. Vieillardii* Baill. var. *vitiense* Muell. Arg. has thus far been reported from Fiji. I do not know whether *C. Degeneri* is the same as Mueller's variety, but it is certainly not conspecific with *C. Vieillardii*. The descriptions of *C. verticillatum* Baill., which Däniker (in Viert. Nat. Forsch. Gesell. Zürich **77** (Beibl. 19): 224. 1932) reports from the Loyalty Islands, and of *C. Vieillardii* var. *mareense* Guillaumin (in Sarasin & Roux, Nov. Caled. Bot. 166. 1920), from New Caledonia, do not suggest the characters of *C. Degeneri*. *Cleidion* is abundant in New Caledonia, but it does not seem to be represented elsewhere in Oceania except by scattered species of restricted range.

**Trigonostemon** (?) **voratus** Croizat, sp. nov.

Arbor videtur vel frutex validus, innovationibus pube sordide albicanti primum adpresse puberulis mox glabratis insigniter cicatricosis; foliis obovato-lanceolatis firme chartaceis, in sicco olivaceo-griseis, subtus pallidioribus, ca. 25 cm. longis et 13 cm. latis, glabris, apice breviter acuminatis vel rotundato-acuminatis fere e medio deorsum gradatim cuneatis, margine integerrimis, venis primariis modice adscendentibus sub margine ipso anastomosatis ca. 10–12-jugis, venulis supra quam subtus magis obviis, gracillimis, crebris, petiolo herbaceo 5–7 cm. longo, puberulo; stipulis valde obscuris; inflorescentiis axillaribus 12–14 cm. longis totis hispido-pubescentibus subherbaceis vel herbaceis, in apice sub floribus bracteis foliaceis, notis totis cum foliis ipsis congruentibus at valde minoribus ornatis, bracteis ad 4 cm. longis et 1.5 cm. latis; pedicellis articulatis ad 2–3 mm. longis validiusculis, pedunculis ut videtur simplicibus bracteolatis; perianthio ca. 15 mm. lato 5-mero, lobis ovatis vel ovato-lanceolatis nervosis, ad 5 mm. longis et 4 mm. latis, margine interdum parcissime et grosse dentato-lobatis, disco ut videtur nullo; ovarii reliquiis hispido-tomentosis.

VITI LEVU: Tholo West: Mbuyombuyo, near Namboutini, *Tabualewa 15569* (A, TYPE), June 17, 1941.

The cited collection is represented by many duplicates, but not a single flower has escaped the attacks of insects; the young fruit has all been devoured but for traces left at the bottom of the perianth. *Trigonostemon* has not previously been reported from Fiji, but the present collection suggests it by the habit of the inflorescence, the nature of the pubescence, and the perianth, and is not excluded by the foliage-characters. That the new species does not belong in *Cleidion* is indicated by the shape of the calyx-lobes and the presence of conspicuous foliaceous bracts on the inflorescence. That the cited specimen represents a species new to Fiji seems to be certain.

## HIPPOCRATEACEAE

**Salacia vitiensis** A. C. Sm. in Am. Jour. Bot. **28:** 440. 1941.

VANUA LEVU: Thakaundrove: Between Valanga and Valethi, Savu Savu Bay region, near sea-level, *Degener & Ordonez 14055* (A) (liana, in open forest; flowers and fruit green).

The cited collection is the third of the species known to me; it was obtained fairly near the type-locality. Thus far *S. vitiensis* is known only from Vanua Levu.

**Salacia pachycarpa** sp. nov.

Frutex scandens sub fructu ubique glaber, ramulis crassis (apicem versus 1.5–3 mm. diametro) teretibus rugosis fusco-cinereis lenticellatis ad nodos incrassatis; foliis oppositis vel suboppositis, petiolis validis canaliculatis 1.5–3 cm. longis, laminis chartaceis siccitate viridi-olivaceis ovato-ellipticis, (6–) 8–18.5 cm. longis, (3–) 4.5–10 cm. latis, basi rotundatis vel obtusis et subito in petiolum decurrentibus, apice obtusis, margine integris et leviter recurvatis, costa supra elevata subtus prominente, nervis secundariis utrinsecus 6–9 curvatis supra paullo subtus valde elevatis, rete venularum intricato utrinque leviter prominulo; inflorescentiis axillaribus ut videtur subfasciculatis, pedicellis fructiferis incrassatis lenticellatis circiter 5 mm. longis, fructibus solitariis subglobosis maturitate 25–30 mm. diametro, basi et apice rotundatis, pericarpio levi lignoso 2–4 mm. crasso, dissepimentis evanescentibus, seminibus ut videtur circiter 4 in pulpo sparso nidulantibus ellipsoideis plerumque angulatis.

VITI LEVU: Ra: Mataimeravula, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15437* (A, TYPE), June 3, 1941 (liana, in dark forest; native name: *wasam*).

Although the cited collection lacks flowers, there seems to be no doubt that it represents a new species related to *S. vitiensis* A. C. Smith, from which it differs in its stouter habit and much larger leaves, which are distinctly broadest below the middle (rather than oblong-elliptic) and have more obvious secondary nerves and veinlets. The fruits of the two species are very similar. Another relative of *S. pachycarpa* is *S. aneityensis* Guillaumin of the New Hebrides, based upon a collection with only two immature fruits. However, these fruits appear to have a thick pericarp and thus to differentiate the species from *S. prinoides* (Willd.) DC. As compared with *S. pachycarpa, S. aneityensis* has proportionately broader elliptic leaf-blades and the pericarp conspicuously pale-verrucose rather than smooth.

## ICACINACEAE

BY R. A. HOWARD

**Citronella vitiensis** Howard, sp. nov.

Arbor parva, ramulis teretibus glabris; foliis 1–1.5 cm. longe petiolatis, laminis subcoriaceis glaberrimis integris late ovatis vel ellipticis, 10–16 cm. longis, 6–12 cm. latis, apice ad 1 cm. longo acuminatis, basi rotundatis vel subcordatis, costa supra vix subtus bene prominente, nervis lateralibus utrinsecus 4 vel 5 arcuatis anastomosantibus; paniculis terminalibus 8–19 cm. longis, cymulis ad 1 cm. longis apice flores plures subcapitato-congestos vel secundo-scorpioides gerentibus, rhachi adpresso-flavido-pubescente; calycis lobis ovatis, 1 mm. longis, 1.5 mm. latis, ciliatis; petalis glabris oblongis, 5 mm. longis, 1.4 mm. latis, costa prominula ornatis; staminibus ad 4.5 mm. longis, filamentis crassiusculis, antheris oblongis 1.2 mm. longis basi cordatis; ovario ovoideo glabro in stylum attenuato; stigmate capitato rugoso; fructibus oblongo-ovoideis ad 3 cm. longis et 1.5 cm. latis complanatis, basi truncatis vel subcordatis, apicem versus angustatis, putamine lignoso conspicue angulari prominenter costato.

VITI LEVU: Naitasiri: Suva Pumping Station, alt. 30 m., *Degener & Ordonez 13773* (A) (tree, in forest; flowers pale greenish yellow; native name: *nunga*); Nasinu, *Gillespie 3590* (GH, NY, US). OVALAU: Levuka Reservoir, *Gillespie 4511* (GH, US), *4527* (GH, NY). VANUA LEVU: Thakaundrove: Vatunivuamonde Mt., Savu Savu Bay region, alt. 300 m., *Degener & Ordonez 14007* (A, TYPE) (small tree, in forest).

This species is similar in general appearance to *Citronella samoensis* (A. Gray) Howard, but the fruits are strikingly different. The drupe is strongly prismatic, with sharp angles due to the rugose putamen, and is flattened or concave on one side. The apex is acute and tapers to a point that is centric, not acentric as in

FIG. 3. *Citronella vitiensis* (drawings made from type specimen); *a*. habit, × ½; *b*. pistil, × 10; *c*. diagrammatic cross-section of pistil; *d*. apical view of mature fruit, × ¾; *e*. diagrammatic cross-section of fruit; *f*. seed, × ¾; *g*. embryo, × 4; *h–j*. three views of a single fruit, × ¾. Drawings by R. A. Howard.

*C. samoensis*. This is the first report of the genus *Citronella* from Fiji, the only other member of the family found there being the common *Medusanthera vitiensis* Seem. For the synonymy of this latter species see Howard in Jour. Arnold Arb. 21: 469. 1940.

## SAPINDACEAE

**Guioa chrysea** sp. nov.

Arbor, innovationibus chryseo-puberulis, ramulis subteretibus demum glabris fusco-cinereis; foliis abrupte pinnatis, petiolo basi incrassato ad 4 cm. longo et rhachi subangulata ut ramulis juvenilibus puberulis vel breviter pilosis; foliolis 5–8 oppositis vel alternatis, petiolulis subcomplanatis 5–8 mm. longis, laminis chartaceis subfalcato-elliptico-oblongis, (6–) 8–13 cm. longis, 2.5–5 cm. latis, basi acutis et in petiolum decurrentibus, apice conspicue acuminatis (acumine ad 1.5 cm. longo obtuso), margine integris et leviter recurvatis, supra glabris vel disperse pilosis, subtus sparse breviter adpresso-chryseo-pilosis ac etiam brunneo-glandulosis, in axillis inter costam ac venas saepe conspicue foveolatis, costa

utrinque prominente, nervis secundariis utrinsecus 5–8 erecto-patentibus irregulariter arcuato-anastomosantibus utrinque valde elevatis, rete venularum intricato utrinque paullo prominulo; inflorescentiis axillaribus vel subterminalibus ad 10 cm. longis copiose ramosis multifloris ubique dense chryseo-pilosis (pilis subpatentibus 0.1–0.2 mm. longis), bracteis anguste oblongis obtusis circiter 2 mm. longis, bracteolis minoribus; floribus in ramulis ultimis brevibus solitariis, pedicellis 0.7–1 mm. longis; sepalis 5 imbricatis submembranaceis concavis suborbicularibus rotundatis 1.5–2.5 mm. diametro glabris vel exterioribus extus ut ramulis inflorescentiae subsericeis; petalis 5 membranaceis suborbicularibus sub anthesi circiter 2.5 mm. diametro (alabastro multo minoribus), glabris vel basim versus ciliolatis, margine undulatis, intus basi squamulatis, squamula bifida 0.4–1 mm. longa distaliter pilis albidis 0.1–0.3 mm. longis dense barbellato-ciliolata; disco annulari integro crenulato glabro; staminibus 8, filamentis filiformibus sub anthesi ad 3 mm. longis albido-pilosis, antheris oblongis 0.6–0.7 mm. longis glabris vel sparse pilosis; ovario rudimentario subconico-triquetro sparse chryseo-sericeo.

VITI LEVU: Tholo North: Nandala, vicinity of Nandarivatu, alt. about 750 m., *Degener 14398* (A, TYPE), Feb. 15, 1941 (specimens from fallen tree, in forest).

*Guioa chrysea* (Sect. *Euguioa*) is a species of the relationship of *G. subfalcata* Radlk., from which it differs in its larger leaflets with more obvious puberulence on the lower surfaces, the short golden hairs of its inflorescence-branches, sepals, etc., and its pilose petal-scales. The leaflets of the new species have less regularly anastomosing secondaries than those of *G. subfalcata* and also have the veinlet reticulation less intricate and not as definitely prominulous.

**Koelreuteria formosana** Hayata, Ic. Pl. Formos. **3:** 64. *pl. 13.* 1913; Radlk. in Pflanzenr. 98 (IV. **165**): 1333. 1933.

VITI LEVU: Tholo North: Below Nandarivatu, alt. about 600 m., *Greenwood 450A* (A) (tree to 11 m. high, in gullies and on hillsides; flowers yellow, the petal-bases red; fruit reddish brown); Ra: Mataimeravula, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15435* (A) (large tree, in open forest; native name: *lombolombo;* extract of leaves used as a black hair-dye).

Although the collectors' notes do not indicate that this plant is an escape from cultivation, this seems certainly to be the case, as the specimens are not to be distinguished from Formosan material. The genus has not previously been reported from the region. Greenwood comments upon the brevity of the flowering season and states that he has collected the same species from the vicinity of Lautoka.

**Harpullia mellea** Lauterb. in Bot. Jahrb. **41:** 229. 1908; Radlk. in Pflanzenr. 98 (IV. **165**): 1453. 1934; Christoph. in Bishop Mus. Bull. **128:** 133. 1935.

KAMBARA: *Smith 1267* (GH, NY) (tree 18 m. high, in forest on limestone formation; fruit red; native name: *vuvula*). FULANGA: *Smith 1153* (GH, NY) (tree 13 m. high, in forest on limestone formation; petals pale yellow; fruit red).

*Harpullia mellea* has previously been reported from Samoa and Tonga. Although Guillaumin (in Jour. Arnold Arb. **14:** 56. 1933) states that *H. arborea* (Blanco) Radlk. occurs in Samoa and Fiji, I have not been able to find other references to such distribution, nor have I seen specimens of *H. arborea* from these groups. Until specimens are available from Fiji, it seems best to recognize the New Hebrides as the eastern limit of *H. arborea*. I believe that the present reference to *H. mellea* is the first authentic record of the genus in Fiji.

## VITACEAE

**Cayratia Seemanniana** sp. nov.

*Vitis saponaria* Seem. in Bonplandia **9:** 254, nomen. 1861; Seem. Mission to Viti 434, nomen. 1862; A. Gray in Proc. Am. Acad. **5:** 316, nomen. 1862; A. Gray in Bonplandia

**10**: 35, nomen. 1862; Seem. Fl. Vit. 44. 1865. Not *Vitis saponaria* Benth. Fl. Austral. **1**: 448. 1863. Not *Cissus saponaria* Planch. in DC. Monogr. Phan. **5**: 574. 1887. Not *Cayratia saponaria* Domin in Rep. Sp. Nov. **11**: 264. 1912; Guillaumin in Jour. Arnold Arb. **12**: 240, as *C. saponacea*. 1931.

Frutex scandens, caulibus gracilibus striatis juventute albo-puberulis et purpurascentibus demum glabris et cinereis; foliis petiolatis trifoliolatis, petiolis gracilibus ut ramulis pallide puberulis ad 12 cm. longis basi incrassatis, petiolulis subteretibus decidue puberulis 1–3.5 cm. (terminalibus ad 6 cm.) longis, laminis tenuiter papyraceis vel subchartaceis ovato-ellipticis, 7–16 cm. longis, 4–12 cm. latis, basi profunde inaequilateraliter cordatis (terminalibus rotundatis), apice obtusis et interdum minute apiculatis, margine conspicue crenatis, supra glabris, subtus in nervis puberulis atque in axillis inter venas ac costam persistenter albido-barbellatis, costa supra elevata subtus prominente, nervis secundariis utrinsecus 5–7 erecto-patentibus (eis basim versus divergentibus et ramosis) utrinque valde prominulis, rete venularum intricato immerso vel utrinque plano; inflorescentiis axillaribus divaricato-cymosis sub anthesi ad 7 cm. sub fructu ad 12 cm. diametro, ubique (pedunculis brevibus, ramulis gracilibus, pedicellis, et calycibus) pilis patentibus albo-cinereo-puberulis atque interdum dense brunneo-glandulosis; floribus in apicibus ramulorum plerumque ternatis, pedicellis gracilibus 1–2 mm. longis; calyce cupuliformi sub anthesi circiter 1.5 mm. longo et 2 mm. diametro, margine truncato vel minute 4-apiculato; petalis 4 membranaceis minute glandulosis oblongis, sub anthesi circiter 3 mm. longis et 2 mm. latis, apice subacutis; staminibus 4 in sulculis minutis disci insertis, filamentis glabris filiformibus 1.4–1.7 mm. longis, antheris oblongo-ellipsoideis circiter 0.7 mm. longis; disco carnoso leviter crenulato minute pallido-glanduloso; ovario in disco immerso, stylo conico circiter 1 mm. longo obtuso, ovulis 4; baccis depresso-globosis rugulosis 7–8 mm. diametro minute luteo-glandulosis columna stylorum persistenter coronatis, pericarpio carnoso, seminibus 3 vel 4 ellipsoideis circiter 5 mm. longis et latis intus conspicue angulatis et fossa plus minusve profunda praeditis.

VITI LEVU: Ra: Saulangitua, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15502* (A, TYPE), June 10, 1941 (liana, in forest). OVALAU: Vicinity of Levuka, alt. 400 m., *Gillespie 4485* (GH). MOTURIKI: *Seemann 76* (GH) (native name: *wa roturotu*). VANUA LEVU: Mbua: Mbua Bay, *U. S. Expl. Exped.* (GH).

There has been considerable confusion concerning the name *Vitis saponaria* and various combinations based upon it. Although the name appeared several times previous to the publication of the first part of Flora Vitiensis in 1865, it was validly published only by Bentham (Fl. Austr. **1**: 448. 1863). The type of the species, therefore, is the plant upon which Bentham based his description. The only specimens actually cited by Bentham are Australian collections of R. Brown and MacGillivray, and these are to be considered cotypes. The fact that Bentham accredits the name to Seemann, on the supposition that the plant listed by Seemann in his Mission to Viti (and also in his reprinted Syst. List Vit. Pl. 4. 1862) is conspecific with the Australian plant, does not give the Fijian collection of Seemann the status of type.

Later authors, including Planchon and Domin, have accepted the Australian and Fijian plants as conspecific and have erroneously accredited the name to Seemann. The correct modern combination for the Australian plant would appear to be *Cayratia saponaria* (Benth.) Domin; even though Domin does not cite Bentham's publication, it is obvious that he is basing his new combination upon Bentham's concept, since only the MacGillivray specimen is cited.

Since it now appears that the Fijian and Australian plants are not conspecific, and since the name *Vitis saponaria* must definitely be taken for the latter, the former should receive a new name. The Fijian specimens cited by Seemann and

Gray have no status as types and therefore it is not necessary to base the new name upon them. I prefer to designate the recent Degener collection as the type, since the material is more complete and ample than that of previous collections. As to the identity of the New Hebrides plant which Guillaumin (in Jour. Arnold Arb. **12**: 240. 1931) cites as *Cayratia "saponacea,"* this is clearly not conspecific with the Fijian plants cited above.

*Cayratia Seemanniana* differs from the Australian *C. saponaria* (Benth.) Domin in having its leaflets thinner and with persistent tufts of hairs in the axils of nerves on the lower surface, its lateral leaflets more conspicuously cordate, and the leaflet-margins more deeply crenulate; whether or not there are good floral differences I cannot say at present. The new species is also closely related to the Papuasian *C. grandifolia* (Warb.) Merr. & Perry, a species with larger and somewhat thicker leaflets with more sharply prominulous veinlets on the lower surfaces and without the definite axillary tomentum, and with a more ample inflorescence.

**Cayratia acuminata** (A. Gray) comb. nov.

*Cissus acuminata* A. Gray, Bot. U. S. Expl. Exped. **1**: 273. 1854; Planch. in DC. Monogr. Phan. **5**: 564. 1887.

*Vitis acuminata* Seem. in Bonplandia **9**: 255. 1861; Fl. Vit. 44. 1865.

VITI LEVU: Tholo North: Nandarivatu, alt. 850 m., *Degener & Ordonez 13575* (A) (liana, in rain-forest).

The cited specimen, in the texture, shape, and cutting of its leaflets, very closely resembles the rather unsatisfactory type collection (*U. S. Expl. Exped.*, GH, from Ovalau). The lateral leaflets of the older collection are sometimes divided and the leaf is thus 5-foliolate; the present collection, which is sterile, has leaves always 3-foliolate. The species represents neither *Cissus* nor *Vitis*, according to the treatment proposed by Gagnepain (in Bull. Soc. Hist. Nat. Autun **24**: 1–41. 1911). Its probable place in *Cayratia* is suggested by its superficial resemblance to such species as *C. japonica* (Thunb.) Gagnep. and *C. trifolia* (L.) Domin.

## BIXACEAE

**Bixa Orellana** L. Sp. Pl. 512. 1753; Setch. in Carn. Inst. Publ. **341**: 68. 1924; Guillaumin in Jour. Arnold Arb. **12**: 225. 1931; Christoph. in Bishop Mus. Bull. **128**: 149. 1935.

VITI LEVU: Tholo North: Nandrau, alt. about 600 m., *Degener 14898* (A) (naturalized, escape from cultivation; native name: *ngesa;* dye from seeds used as facial decoration). WITHOUT LOCALITY: *Horne* (GH).

This common species, cultivated in essentially all warm countries, is apparently to be included in the naturalized flora of Fiji. The family has not previously been reported from the group in taxonomic literature.

## VIOLACEAE

**Agatea violaris** A. Gray, f. **typica** f. nov.

*Agatea violaris* A. Gray, Bot. U. S. Expl. Exped. **1**: 89. *pl. 7.* 1854; Seem. Fl. Vit. 6. 1865.

Planta foliis glabris, ramulis inflorescentiae sub anthesi arcte puberulis.

Gray originally described two varieties of this species without naming them. Var. α was said to have oblong-lanceolate leaves subequal to the panicles, and var. β larger ovate-oblong leaves exceeding the panicles. Numerous modern collections of the species indicate that there are all variations between these extremes.

While I do not believe, therefore, that there is any necessity for the two varieties as proposed by Gray, and while I intend to include both of these varieties in my forma *typica,* I nevertheless here designate the type of his var. $\beta$ as the type of my forma *typica,* in order to avoid any future confusion. In the present collection, the following specimens are referable to *A. violaris* f. *typica:*

VITI LEVU: Tholo North: *Degener & Ordonez 13576, Degener 14367, 14403, 14679;* Ra: *Degener 15507;* Rewa: *Degener & Ordonez 13771.* VANUA LEVU: Thakaundrove: *Degener & Ordonez 14182, 14200* (all A).

Of the cited specimens, no. *14182* is fairly close to the type of Gray's var. $\alpha$, the others more nearly resembling his var. $\beta$. I propose the forma *typica* to include both of Gray's unnamed varieties and all the other material of the species which I have seen, with the exception of two collections referable to the following.

**Agatea violaris** A. Gray, f. **mollis** f. nov.

Planta laminis foliorum subtus et interdum supra dense et molliter cinereo-pilosis, ramulis inflorescentiae sub anthesi conspicue pilosis.

VITI LEVU: Tholo West: Mbulu, near Sovi Bay, alt. 30–60 m., *Degener 15046* (A) (liana, in forest); Naruku, vicinity of Mbelo, near Vatukarasa, alt. about 250 m., *Degener 15314* (A, TYPE), May 18, 1941 (liana, in forest; native name: *wa ndrengandrenga*).

Although no floral or other consequential differences are discernible between the cited specimens and specimens of the typical form, the conspicuous pubescence makes nomenclatural recognition of this form desirable. The fact that *Degener 14403,* cited as the form *typica,* has a few soft hairs on the lower leaf-surface indicates that the differences between the two forms are not of great consequence.

## FLACOURTIACEAE

The Fijian specimens of *Homalium* have been referred in herbaria to two species, *H. vitiense* Benth. and *H. nitens* Turrill. Among the collections now available to me, it seems obvious that more than two species are distinguishable, although their characters are somewhat intangible and difficult to express without resorting to measurements. All appear to be endemic and all have the stamens in threes (occasionally in fours), being members of the Section *Eumyrianthcia,* according to Gilg's treatment (in E. & P. Nat. Pfl. ed. 2. **21**: 426. 1925). Fairly dependable specific characters are apparently to be found in the flower-size, the proportions of perianth-segments to stamens and styles, the length of the inflorescence and pedicels, and to a certain extent in foliage. The five species recognized in the following key seem quite satisfactory on the basis of present material.

Flowers 2.5–4 mm. long at anthesis, the calyx-tube nearly as broad as long; perianth-segments 14–22, 1–2.5 mm. long; glands at base of perianth glabrous; stamens and styles at anthesis subequal to or exceeding the perianth-segments.
Inflorescence 6–12 cm. long, the bracts 0.7–1.6 mm. long, the flowers 2.5–3 mm. long, sessile or on pedicels to 1.5 mm. long ..... 1. *H. vitiense.*
Inflorescence 12–20 cm. long, the bracts 1.5–2 mm. long, the flowers 3.5–4 mm. long, on pedicels 2–3 mm. long ..... 2. *H. Gillespiei.*
Flowers 4.5–7 mm. long at anthesis, the calyx-tube comparatively narrow, longer than broad; perianth-segments 3–4.5 mm. long, longer than the calyx-tube.
Stamens and styles less than one-half as long as the perianth-segments; glands at base of perianth densely hirsute; leaf-blades cuspidate at apex.
Inflorescence 8–16 cm. long, the pedicels 1–3 mm. long, the flowers 5–7 mm. long; perianth-segments 16–22; leaf-blades 5–8 cm. long, 2.5–5 cm. broad ....3. *H. nitens.*
Inflorescence 16–24 cm. long, the pedicels 0.7–1.5 mm. long, the flowers 4.5–6 mm. long; perianth-segments 12–16; leaf-blades 8–15 cm. long, 5–9 cm. broad ..4. *H. laurifolium.*

Stamens and styles 3–4 mm. long, nearly as long as the 16–18 perianth-segments; glands at base of perianth subglabrous; pubescence of inflorescence dense and conspicuous; leaf-blades rounded or obtuse at apex .....5. *H. pallidum.*

1. **Homalium vitiense** Benth. in Jour. Linn. Soc. Bot. **4:** 36. 1860; Seem. Fl. Vit. 95. 1865.

VITI LEVU: Tholo North: Fatia, west of Tavua, alt. 30–60 m., *Degener 14969* (A) (tree 4 m. high, in dry forested ravine; flowers greenish); Naitasiri: Tamavua woods, 6 miles from Suva, alt. 150 m., *Gillespie 2018* (GH, NY). VANUA LEVU: Thakaundrove: Natewa Peninsula, hills west of Mbutha Bay, alt. 150–350 m., *Smith 831* (GH, NY) (tree 5 m. high, on exposed cliff-head; flowers white). WITHOUT LOCALITY: *Horne 490* (GH).

Although I have not seen the type of this species, collected by Milne on Viti Levu, there seems little doubt, from the description, that the small-flowered specimens cited above represent the same species.

2. **Homalium Gillespiei** sp. nov.

Arbor (?), ramulis gracilibus subteretibus fusco-cinereis juventute cinereo-puberulis mox glabris et conspicue lenticellatis; petiolis gracilibus canaliculatis 6–9 mm. longis ut ramulis decidue puberulis; laminis chartaceis siccitate fuscis ovato-ellipticis, 5–8 cm. longis, 3–4 cm. latis, basi obtusis et in petiolum decurrentibus, apice obtuse cuspidatis, margine crenato-serratis (dentibus obtusis 2–4 per centimetrum), utrinque praeter costam interdum inconspicue puberulam glabris, costa utrinque paullo elevata, nervis secundariis utrinsecus 5–8 arcuato-adscendentibus utrinque valde prominulis, rete venularum intricato utrinque prominulo; inflorescentiis racemosis axillaribus solitariis 12–20 cm. longis, pedunculo ad 3 cm. longo et rhachi gracilibus dense hirsutis (pilis albo-cinereis 0.3–0.7 mm. longis), bracteis pilosis oblongis 1.5–2 mm. longis, pedicellis sub anthesi strigosis 2–3 mm. longis; floribus sub anthesi 3.5–4 mm. longis cinereo-strigosis, tubo calycis turbinato 1–1.5 mm. longo et lato; sepalis 7 vel 8 submembranaceis lanceolatis, 2–2.5 mm. longis, circiter 0.3 mm. latis, utrinque strigosis; petalis 7 vel 8 sepalis similibus; glandulis glabris subglobosis circiter 0.2 mm. diametro; staminibus 3 (raro 4) in fasciculis, filamentis filiformibus patente-hirsutis petala subaequalibus, antheris minutis subglobosis circiter 0.15 mm. diametro; ovario piloso, stylis plerumque 5 basi connatis distaliter liberis filiformibus stamina subaequalibus.

VITI LEVU: Tholo North: Nasukamai, near Wainimbuka River, alt. 400 m., *Gillespie 3394.6* (GH, TYPE, NY), Dec. 27, 1927.

The cited specimen has characters suggestive of both *H. vitiense* and *H. nitens,* but I believe that it cannot be referred to either. Its small flowers, with stamens and styles subequalling the perianth, resemble those of *H. vitiense,* while its long bracts and pedicels suggest those of *H. nitens.* The inflorescence of the new species is conspicuously elongate.

3. **Homalium nitens** Turrill in Jour. Linn. Soc. Bot. **43:** 23. 1915.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, *im Thurn 132* (NY, TYPE COLL.); alt. about 830 m., *Reay 18* (A) (shrub to 3 m. high; inflorescence brown to pink; native name: *molaca;* infusion of bark used as a tonic); Serua: Vicinity of Ngaloa, alt. about 30 m., *Degener 15087* (A), *15088* (A) (trees, in forest; inflorescence grayish or pink; native name: *tarotaro;* fresh inflorescences woven into necklaces).

The young inflorescences appear to be pink, subsequently fading to a gray or brown color.

4. **Homalium laurifolium** sp. nov.

Arbor ad 3 m. alta, ramulis subteretibus gracilibus glabris cinereis pallide lenticellatis; petiolis canaliculatis nigrescentibus (5–) 10–18 mm. longis; laminis chartaceis ovato-ellipticis, 8–15 cm. longis, 5–9 cm. latis, basi rotundatis vel ob-

tusis et in petiolum subito decurrentibus, apice obtuse cuspidatis vel breviter acuminatis, margine leviter recurvatis et undulato-crenatis, utrinque glabris, costa supra elevata subtus prominente, nervis secundariis utrinsecus 5–7 arcuato-adscendentibus utrinque acute elevatis, rete venularum intricato utrinque valde prominulo; inflorescentiis axillaribus racemosis 16–24 cm. longis, pedunculo ad 6 cm. longo et rhachi gracilibus densissime et breviter cinereo-hirsutis, bracteis linearibus acutis hirsutis 1.5–2 mm. longis, pedicellis sub anthesi pilosis 0.7–1.5 mm. longis; floribus sub anthesi 4.5–6 mm. longis, tubo calycis obconico, 1.5–2.5 mm. longo, 1–1.2 mm. lato, dense pilosulo; sepalis 6–8 membranaceis ligulatis, 3–3.5 mm. longis, 0.3–0.4 mm. latis, subacutis, utrinque pilis 0.4–0.7 mm. longis dense cinereo-hirsutis; petalis 6–8 sepalis similibus; glandulis dense hirsutis subglobosis circiter 0.3 mm. diametro; staminibus 3 in fasciculis quam petalis multo brevioribus, filamentis filiformibus 0.7–1 mm. longis basim versus sparse hirsutis, antheris circiter 0.25 mm. latis; ovario dense hirsuto, stylis 5 basi connatis superne liberis et filiformibus stamina subaequalibus.

VITI LEVU: Tholo West: Naruku, vicinity of Mbelo, near Vatukarasa, alt. about 250 m., *Degener 15307* (A, TYPE), May 18, 1941 (tree 3 m. high, in forest; native name: *sakisakivuto;* inflorescences used for necklaces; cold-water extract from wood used medicinally); Rewa: Suva, *Meebold 8175* (NY).

The new species is readily distinguished from *H. nitens,* its closest relative, by the characters indicated in the key and also by the fact that the stamens and styles are proportionately shorter, being only about one-third or less the length of the petals. The Meebold specimen differs from the type in its somewhat shorter petioles, but in all other characters the cited specimens agree closely.

5. **Homalium pallidum** sp. nov.

Arbor 15 m. alta, ramulis subteretibus crassis juventute pallidis et obscure puberulis demum fusco-cinereis glabris conspicue albido-lenticellatis; petiolis pallidis crassis canaliculatis 6–10 mm. longis mox glabris; laminis chartaceis siccitate olivaceis late ellipticis vel subrotundatis, 5–9 cm. longis, 4–6.5 cm. latis, basi rotundatis et in petiolum subito decurrentibus, apice rotundatis vel obtusis, margine conspicue undulato-crenatis et leviter recurvatis, utrinque glabris, costa supra elevata subtus prominente, nervis secundariis utrinsecus 5–7 arcuato-adscendentibus utrinque valde prominulis, rete venularum intricato utrinque prominulo; inflorescentiis axillaribus et racemosis vel terminalibus et paniculatis, racemis (vel ramulis paucis paniculae brevis) 6–9 cm. longis, pedunculo brevi et rhachi gracilibus densissime cinereo-pilosis, bracteis ovato-oblongis circiter 1.5 mm. longis extus strigosis, pedicellis sub anthesi pilosis 1–2 mm. longis; floribus sub anthesi 6.5–7 mm. longis, tubo calycis obconico, 2–2.5 mm. longo, 1.5–2 mm. lato, minute et dense cinereo-subsericeo; sepalis 8 vel 9 membranaceis obovato-lanceolatis, 3.5–4.5 mm. longis, 0.6–0.8 mm. latis, apice acutis, utrinque sericeis; petalis 8 vel 9 sepalis similibus; glandulis subglabris subglobosis circiter 0.3 mm. diametro; staminibus 3 in fasciculis, filamentis filiformibus basim versus sparse pilosis petala subaequalibus (3–4 mm. longis), antheris oblongis circiter 0.3 mm. longis; ovario hirsuto, stylis 5 basi connatis superne liberis et filiformibus stamina subaequalibus.

FULANGA: *Smith 1221* (GH, NY, TYPE), Feb. 26, 1934 (tree 15 m. high, in forest on limestone formation; petals white; native name: *mbolovatu;* wood hard and considered useful).

The long stamens and styles of the large flowers, the densely pubescent inflorescences, and the broad subrotund leaves amply differentiate this species from its allies. It bears a close floral resemblance to *H. aneityense* Guillaumin, of the New Hebrides, but that species has the stamens in fives (in several flowers which I dissected), while its leaf-blades lack the conspicuous crenations of the new species.

**Xylosma Archboldianum** sp. nov.

Arbor praeter inflorescentiam glabra, ramulis gracilibus subteretibus fusco-cinereis conspicue lenticellatis; petiolis leviter canaliculatis 3–6 mm. longis; laminis chartaceis siccitate viridi-olivaceis supra nitidis ovatis, 4–7 cm. longis, 2–3.5 cm. latis, basi rotundatis et in petiolum subito decurrentibus, apice obtusis vel leviter emarginatis, margine integris et leviter recurvatis, costa supra subplana vel paullo elevata subtus valde elevata, nervis secundariis utrinsecus 4–7 adscendentibus utrinque valde prominulis, rete venularum intricato acute prominulo; inflorescentiis ♂ immaturis solis visis axillaribus congestis breviter racemosis vel subfasciculatis plurifloris, rhachi pedicellisque cinereo-puberulis, bracteis obovato-oblongis obtusis circiter 0.7 mm. longis, pedicellis brevibus ante anthesim 1 mm. longis; sepalis 4 late ovato-deltoideis ante anthesim circiter 0.7 mm. longis et 1 mm. latis subacutis ciliolatis; staminibus circiter 30, filamentis brevibus, antheris oblongis circiter 0.4 mm. longis.

Viti Levu: Ra: Mataimeravula, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15435a* (A, type), June 3, 1941 (tree, on dry forested forehill).

Following Sleumer's revision of the Malaysian-Pacific species of *Xylosma* (in Notizbl. Bot. Gart. Berlin **14**: 288–297. 1938), *X. Archboldianum* is closely related only to *X. Guillauminii* Sleumer of the New Hebrides, differing in its more distinctly ovate leaf-blades, which are rounded rather than subacute at base, more conspicuously shining, and with more sharply prominulous veinlet-reticulation. The known flowers of both species are very immature, but it seems likely that the inflorescence of *X. Archboldianum* will prove to be more compact. The new species is not closely related to *X. orbiculatum* (Forst.) Forst. f., the only species previously known from Fiji.

**Flacourtia ovata** Gillespie in Bishop Mus. Bull. **83**: *27. f. 34* (excl. *a, f, g*). 1931.

Viti Levu: Naitasiri: Tamavua woods, 6–7.5 miles from Suva, alt. 150 m., *Gillespie 2175* (GH), *2446* (type coll., GH, NY); Serua: Vatuvilakia, vicinity of Ngaloa, alt. 90 m., *Degener 15152* (A) (few-branched virgate tree or shrub to 3 m. high, in dense forest); Vatutavathe, near Ngaloa, alt. 150 m., *Degener 15202a* (A) (in forest).

In describing this species, Gillespie also cites his no. *3963* and *Horne 301*. These specimens differ from the type collection in their smaller and thinner leaves, and also in a stylar character which will be pointed out below, as I believe them to represent an undescribed species. No staminate flowers of *F. ovata* are known, those described by Gillespie having been taken from *Horne 301*. This part of his description, therefore, and also figs. *a, f,* and *g* of his plate should be taken to refer to the following new species.

**Flacourtia subintegra** sp. nov.

Arbor gracilis ad 8 m. alta inflorescentiis minute puberulis exceptis glabra, ramulis subteretibus gracilibus fusco-cinereis conspicue lenticellatis; petiolis leviter canaliculatis 5–8 mm. longis; laminis chartaceis vel papyraceis siccitate fusco-olivaceis ovato-ellipticis, 6–10 cm. longis, 3–6 cm. latis, basi rotundatis vel late obtusis, apice obtusis vel obtuse cuspidatis, margine integris vel inconspicue undulato-crenulatis, costa supra paullo elevata subtus prominente, nervis secundariis utrinsecus 4–6 adscendentibus marginem versus arcuatis et inconspicue anastomosantibus utrinque acute elevatis, rete venularum intricato utrinque prominulo; inflorescentiis ♂ axillaribus compactis breviter racemosis vel subfasciculatis 3–12-floris, pedunculo brevi, rhachi, et pedicellis minute cinereo-puberulis vel subglabris, bracteis ovatis obtusis 0.5–1 mm. longis, ramulis lateralibus (infra articulationem pedicelli) 1–1.5 mm. longis, pedicellis gracilibus sub anthesi 2–3 mm. longis (supra articulationem); sepalis 4 submembranaceis deltoideo-ovatis, 1–1.5 mm. longis, 1.5–1.7 latis, apice rotundatis, sparse puberulis glabrescentibus;

disco glanduloso conspicue crenulato; staminibus numerosis (circiter 40–50), filamentis filiformibus sub anthesi 1.5–2 mm. longis, antheris oblongis circiter 0.5 mm. diametro; fructibus obovato-ellipsoideis maturitate ad 7 mm. diametro apice stylis 5 vel 6 minutis et distinctis coronatis, pericarpio subcarnoso, pyrenis plerumque 8–10 ellipsoideis 3–4 mm. longis.

VITI LEVU: Tholo North: Korovou, east of Tavua, alt. 60–120 m., *Degener 14953* (A) (tree 2 m. high, in isolated dry forested ravine); vicinity of Nandarivatu, alt. 900 m., *Gillespie 3963* (GH). VANUA LEVU: Mbua: Southern portion of Seatovo Range, alt. 100–350 m., *Smith 1700* (GH, NY) (slender tree 4 m. high, in thickets along stream; fruit deep red); Thakaundrove: Natewa Bay region, hills west of Korotasere, alt. 100–300 m., *Smith 1939* (GH, NY, TYPE), June 8, 1934 (tree 8 m. high, in dense forest; anthers pale yellow). WITHOUT DEFINITE LOCALITY: *Horne s. n.* (GH), *301* (GH).

*Flacourtia subintegra* differs from *F. ovata* Gillespie in its conspicuously smaller and thinner leaf-blades, those of *F. ovata* being (9–) 12–28 cm. long and (5.5–) 7–15 cm. broad. The fruits of the new species are smaller, and even when fully mature do not exceed 7 mm. in diameter; they are surmounted by 5 or 6 minute and quite separate styles, whereas the styles of *F. ovata* are conspicuous and ascending from an obviously common base. Of the cited specimens, the type and *Horne 301* bear staminate flowers, the others being in fruit.

**Flacourtia Degeneri** sp. nov.

Arbor inflorescentiis exceptis glabra, ramulis crassis teretibus fusco-cinereis lenticellatis; petiolis crassis canaliculatis 5–9 mm. longis; laminis chartaceis siccitate fusco-olivaceis ovatis, 9–15 cm. longis, 5–8 cm. latis, basi rotundatis et in petiolum subito decurrentibus, apice obtusis vel obtuse et gradatim angustatis, margine conspicue crenulatis (dentibus 2 vel 3 per centimetrum), costa supra paullo elevata subtus prominente, nervis secundariis utrinsecus 7–9 adscendentibus marginem versus arcuatis et anastomosantibus utrinque acute elevatis, rete venularum intricato supra paullo subtus valde prominulo; inflorescentiis ♂ axillaribus breviter racemosis vel subfasciculatis plurifloris, rhachi pedicellisque dense puberulis, bracteis oblongis obtusis 1–2 mm. longis, ramulis lateralibus (infra articulationem pedicelli) 3–4.5 mm. longis, pedicellis gracilibus sub anthesi 5–7 mm. longis (supra articulationem); sepalis 4 submembranaceis ovatis, circiter 2.5 mm. longis et latis, apice obtusis, extus glabris, intus puberulis; disco glanduloso conspicue crenulato; staminibus numerosis (circiter 80), filamentis filiformibus sub anthesi 2–3 mm. longis, antheris oblongis 0.7–0.9 mm. longis.

VITI LEVU: Tholo North: Nandrau, vicinity of Nandarivatu, alt. about 600 m., *Degener 14890* (A, TYPE), Mar. 26, 1941 (in forest).

*Flacourtia Degeneri* differs from the preceding new species (*F. subintegra*) in its conspicuously crenulate rather than subentire leaf-blades, which on the average are slightly larger. Staminate flowers of *F. Degeneri* are larger in all dimensions, this being especially obvious when the pedicels are examined. As compared with *F. ovata* Gillespie, the new species has the leaf-blades thinner in texture, averaging smaller, more conspicuously and more finely crenulate, and with more intricate and obvious veinlet-reticulation. When flowers and fruits of both species are known, other characters of separation may be apparent.

**Casearia disticha** A. Gray, Bot. U. S. Expl. Exped. **1**: 81 (excl. syn.). *pl. 5A*. 1854; Seem. Fl. Vit. 98. 1865; Briquet in Ann. Conserv. Jard. Bot. Genève **2**: 64. 1898.

*Casearia Seemanni* Briquet in Ann. Conserv. Jard. Bot. Genève **2**: 65, sphalm. 1898.

In the cited publication, Briquet proposes a variety *minor* of *C. Melistaurum* Spreng., basing it upon several New Caledonian collections and also citing: "Iles Fiji (ex A. Gray l. c.)." Gray, however, had referred no Fijian plant to *C. Melistaurum*, merely indicating the possibility that his *C. disticha* would prove to be

conspecific with the New Caledonian plant. That Briquet did not wish to reduce *C. disticha* to *C. Melistaurum* var. *minor* is indicated by his subsequent redescription of *C. disticha.* It may be safely assumed, upon the basis of collections up to the present, that *C. Melistaurum* does not occur in Fiji; it differs from *C. disticha* in obvious foliage characters. Although Gray, in his choice of a specific name, indicated his belief that the Fijian plant might be conspecific with *Melistaurum distichum* Forst., his binomial is definitely to be taken as a new species and not a new combination.

*Casearia disticha* is fairly common in Fiji and appears to be quite variable. As I interpret the species, it includes the following collections:

VITI LEVU: Tholo North: Nandarivatu, alt. 850 m., *Degener & Ordonez 13588* (A), *13608* (A); Loma Langa Mt., alt. 1200 m., *Gillespie 3342* (GH). KANDAVU: Hills above Namalata and Ngaloa Bays, alt. 200–400 m., *Smith, 93, 100, 165* (all GH, NY). OVALAU: *Seemann 11* (GH); vicinity of Levuka, alt. 500 m., *Gillespie 4427* (GH). VANUA LEVU: Mbua: Mbua Bay, *U. S. Expl. Exped.* (GH, TYPE COLL.); Thakaundrove: Savu Savu Bay region, alt. about 90 m., *Degener & Ordonez 13849, 13850, 14184* (all A); Mt. Ndikeva, alt. 500–700 m., *Smith 1889, 1906* (both GH, NY). WITHOUT DEFINITE LOCALITY: *Storck 9* (GH); *Horne s. n.* (GH).

The type collection has thin leaf-blades, with prominulous veinlets on the lower surface, and comparatively short petioles (2–5 mm. long). Essentially identical with this are: *Seemann 11, Horne s. n., Storck 9,* and *Gillespie 3342* and *4427.* A form with leaf-blades similar in texture but with petioles 5–13 mm. long is represented by *Degener & Ordonez 13588* and *13608* and *Smith 1889* and *1906.* Similar to this, but with the leaf-blades a trifle thicker in texture, are *Smith 93, 100,* and *165.* A form close to the type, but with the leaf-blades inclined to be distinctly ovate, rather than elliptic, is represented by *Degener & Ordonez 13849, 13850,* and *14184.* The first of these latter specimens has the leaf-blades unusually large, up to 20 cm. long and 9 cm. broad.

The flowers of the cited specimens are all essentially similar, even in the most minute details. In view of this, it seems that the various foliage forms are not worthy of nomenclatural recognition. Closely allied to this complex is the specimen described by Gray as *C. Richii* A. Gray (Bot. U. S. Expl. Exped. **1**: 82. *pl. 5B.* 1854; Seem. Fl. Vit. 98. 1865). This may be merely a form of *C. disticha* with more compact habit and smaller leaves, but for the time being it is perhaps best retained as a species. It is represented by *Degener 15073* (A), from Mt. Ngamo, near Ngaloa, Serua, Viti Levu.

**Casearia angustifolia** sp. nov.

Frutex ad 4 m. altus, ramulis gracilibus subteretibus glabris fusco-cinereis; petiolis canaliculatis 2–3 mm. longis; laminis chartaceis siccitate viridi-olivaceis anguste oblongis, 6–10 cm. longis, 2–3 cm. latis, basi rotundatis vel late obtusis, apice gradatim acuminatis, margine dentibus callosis circiter 3 per centimetrum minute serrulatis, pellucido-punctatis vel breviter lineolatis, supra glabris subtus costa et praecipue in axillis nervorum breviter hirsutis et barbellatis demum glabris, costa supra prominula vel subplana subtus elevata, nervis secundariis utrinsecus 5 vel 6 adscendentibus curvatis supra subplanis subtus leviter elevatis, rete venularum intricato supra obscuro subtus leviter prominulo; inflorescentiis axillaribus fasciculatis plurifloris, bracteis numerosis puberulis subacutis deltoideo-oblongis 1–1.5 mm. longis, pedicellis gracilibus subglabris sub anthesi circiter 1 mm. longis obscure articulatis; sepalis 5 membranaceis imbricatis concavis ellipticis 1.5–2 mm. longis, conspicue glandulosis (glandulis opacis), evidenter nervatis, apice rotundatis, exterioribus apicem versus puberulis; staminibus 10 alternatim inaequalibus, filamentis filiformibus minute puberulis alternatim circiter 0.6

mm. et 1 mm. longis, antheris late oblongis circiter 0.3 mm. longis; lobis disci anguste oblongis circiter 0.5 mm. longis, apice debiliter pilosis; ovario glabro ellipsoideo sub anthesi circiter 1 mm. longo, stylo brevi crasso, stigmate capitato circiter 0.4 mm. diametro.

VANUA LEVU: Thakaundrove: Southern slope of Mt. Mariko, alt. 400–600 m., *Smith 411* (GH, TYPE, NY), Nov. 14, 1933 (shrub 4 m. high; flower-buds green).

*Casearia angustifolia,* a member of the Section *Pitumba* and closely related to *C. disticha* A. Gray, differs from that species in having its leaf-margins minutely but distinctly serrulate with callose-tipped teeth rather than entire or very inconspicuously crenulate-serrulate. *Casearia disticha* has its sepals often thick and usually opaque, with the veins immersed and the glands either not obvious or pellucid; *C. angustifolia,* on the other hand, has its sepals membranous and translucent, with obvious veins, and conspicuously punctate with opaque glands. The leaf-blades of the new species are proportionately narrower than those of *C. disticha* and have more ascending secondaries.

**Casearia longifolia** sp. nov.

Arbor circiter 3 m. alta inflorescentiis et stipulis exceptis ubique glabra, ramulis elongatis gracilibus teretibus fusco-cinereis leviter flexuosis lenticellatis, stipulis anguste deltoideis circiter 1.5 mm. longis extus pilosis; petiolis gracilibus canaliculatis 5–9 mm. longis; laminis chartaceis siccitate viridibus oblongo-lanceolatis, 10–14 cm. longis, 2–3.5 cm. latis, basi anguste acutis et in petiolum gradatim decurrentibus, apicem versus angustatis et apice ipso obtusis, margine integris vel leviter undulato-crenulatis, copiose pellucido-punctatis, costa supra leviter elevata subtus prominente, nervis secundariis utrinsecus 9–13 arcuato-adscendentibus utrinque valde prominulis, rete venularum utrinque leviter prominulo; inflorescentiis axillaribus, floribus 1—pluribus forsan in specimine nostro abnormibus, bracteis numerosis papyraceis obtusis oblongo-ellipticis circiter 1 mm. longis extus puberulis, pedicellis sub fructu juvenili glabris crassis 2–3 mm. longis; sepalis 5 sub fructu subcoriaceis rotundatis glabris late ovatis, 1.5–2 mm. longis, circiter 3 mm. latis; filamentis persistentibus (et staminodiis ac lobis disci?) numerosis congestis lanceolatis ad 3 mm. longis puberulis basi incrassatis; fructibus juvenilibus ellipsoideis, in specimine nostro 3–4 mm. longis et latis, dense tomentellis, stylo brevi crasso, stigmate subcapitato.

VITI LEVU: Ra: Vatundamu, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15390* (A, TYPE), June 2, 1941 (tree 3 m. high, on dry forested forehill).

It seems likely that the flowers of the cited specimen are not normal, as the appendages around the ovary are more numerous than is to be expected in *Casearia,* if these are to be construed as old filaments and lobes of the disk. In addition, the young fruits appear to be sterile and unusually thick-walled. However, there is no doubt that the specimen represents a *Casearia,* and its relationship is probably with *C. disticha* A. Gray and its allies; it is readily distinguished by its long and narrow leaf-blades, numerous secondary nerves, etc. Normal young flowers are desired for the satisfactory placing of the species.

## TURNERACEAE

**Turnera ulmifolia** L. Sp. Pl. 271. 1753.

VANUA LEVU: Thakaundrove: Waina, Maravu, near Salt Lake, near sea-level, *Degener & Ordonez 14193* (A) (very common naturalized weed under coconut palms; shrub about 1 m. high; flowers yellow).

This common American weed may be a recent introduction, as it apparently has not previously been reported from Fiji. The collectors report it to be very localized. The family is new to the literature dealing with Fijian plants.

## PASSIFLORACEAE

(determinations by E. P. Killip)

**Passiflora suberosa** L. Sp. Pl. 958. 1753; Killip in Field Mus. Publ. Bot. **19**: 88. 1938.

OVALAU: Near Levuka, alt. 15 m., *Degener & Ordonez 13788* (A) (vine, in pasture).

This tropical American species, which has been widely introduced into the Old World tropics, has been reported from Hawaii, New Caledonia, and the Loyalty Islands, but apparently not from other parts of the Pacific.

**Passiflora maliformis** L. Sp. Pl. 956. 1753; Killip in Field Mus. Publ. Bot. **19**: 352. 1938.

VITI LEVU: Ra: Nanukuloa, *Degener & Ordonez 13673* (A) (vine; an escape).

Previously reported, in the Pacific, only from Rarotonga, this tropical American species is probably becoming naturalized in Fiji.

**Passiflora foetida** L. var. **hispida** (DC.) Killip in Bull. Torrey Bot. Club **58**: 408. 1931; in Field Mus. Publ. Bot. **19**: 494. 1938.

VITI LEVU: Lautoka: Lautoka, near sea-level, *Degener & Ordonez 13686* (A, US) (roadside weed; fruit yellow).

This widespread variety has not previously been reported from Fiji, nor has the species. However, *P. foetida* is known as a weed in several other Pacific groups, including Samoa and the New Hebrides; probably some reports of the species in the Pacific are referable to the variety *hispida*.

## THYMELIACEAE

**Gonystylus punctatus** sp. nov.

Arbor ad 5 m. alta, ramulis subteretibus gracilibus rugulosis brunneo-purpurascentibus apicem versus interdum sparse pilosis mox glabris; foliis alternatis, petiolis crassis rugulosis subteretibus 10–17 mm. longis juventute sparse strigoso-puberulis mox glabris, laminis chartaceis vel subcoriaceis glabris siccitate viridi-olivaceis oblongis, 9–15 cm. longis, 3–7 cm. latis, basi rotundatis vel late obtusis, apice gradatim angustatis et obtusis vel subacutis, margine integris et leviter recurvatis, copiose et conspicue pellucido-punctatis, costa supra paullo canaliculata vel interdum prominula subtus prominente, nervis secundariis utrinsecus 15–20 patentibus cum aliis similibus numerosis interspersis marginem versus anastomosantibus utrinque acute prominulis, rete venularum intricato utrinque plus minusve prominulo; inflorescentiis apice ramulorum brevium terminalibus solitariis ad 9 cm. longis ut videtur pauciramosis et anguste paniculatis, pedunculo brevi, rhachi ramulisque pilis luteo-cinereis ad 0.3 mm. longis sericeo-tomentellis demum glabris, floribus desideratis; pedicello sub fructu incrassato ad 5 mm. diametro rugoso glabro 2–2.5 cm. longo, lobis persistentibus calycis 5 coriaceis deltoideis, circiter 5 mm. longis et latis, extus pallide puberulis vel glabris, intus pilis stramineis circiter 1 mm. longis dense hispido-sericeis; fructibus ut videtur falcato-ellipsoideis ad 9 cm. longis et 6 cm. latis, basi rotundatis et breviter stipitatis, 3-valvatis (valvis 2 quam altera majoribus), siccitate brunneis, pericarpio lignoso crasso, mesocarpio transverse fibroso 6–8 mm. crasso, endocarpio coriaceo pallido, seminibus oblongis circiter 4 cm. longis et 2 cm. latis.

VITI LEVU: Tholo West: Mbuyombuyo, near Namboutini, *Tabualewa 15607* (A, TYPE), June 18, 1941 (tree 5 m. high, in forest; native name: *ronga*).

The discovery of a species of *Gonystylus* in Fiji is quite unexpected, as the genus has previously been thought to have a compact range in Malaysia, the Philippines, and the western portion of New Guinea. Although our material lacks flowers, there can be no doubt of its place in the genus, as indicated by the

leaf-texture, venation, etc., and the structure of the fruits. The conspicuously punctate leaf-blades distinguish the Fijian species from its allies, although several other species have a similar but less obvious punctation. The fact that the leaf-

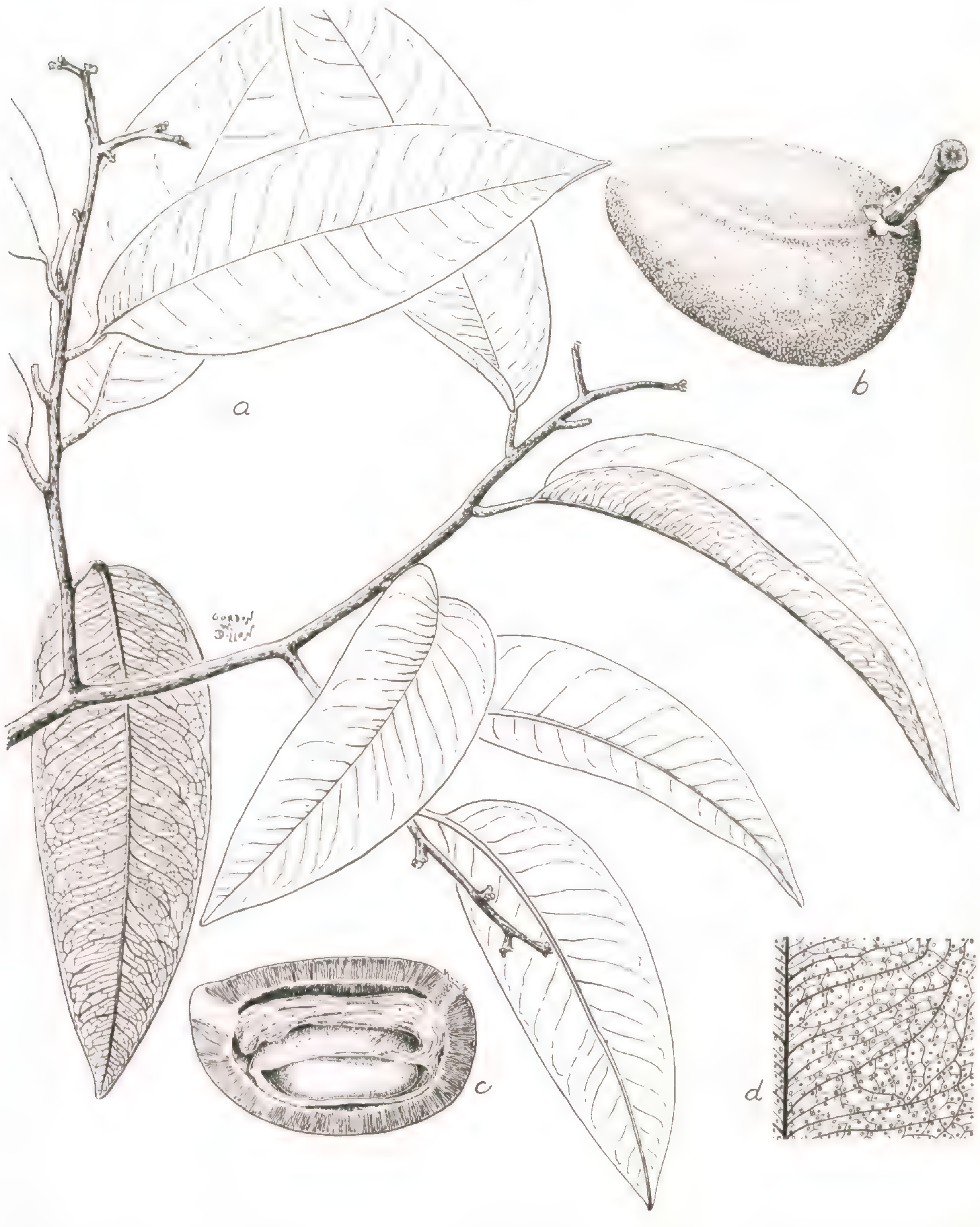


Fig. 4. *Gonystylus punctatus;* *a.* branchlet from fruiting specimen, × ½; *b.* fruit, × ½; *c.* longitudinal section of dried fruit, × ½; *d.* portion of leaf-blade in transmitted light, showing distribution of the pellucid glands, × 1.

blades of the new species are gradually, rather than abruptly, narrowed toward the apex is also a distinguishing specific feature.

In referring *Gonystylus* to the Thymeliaceae, I follow the recent informative discussion of the family by Domke (in Bibl. Bot. **27** [Heft 111]: 1–151. 1934).

### Phaleria Jack

Fiji seems to be a center of distribution in *Phaleria,* nine species being recognizable there; two of these species also occur in Samoa and Tonga, but no others are known from the Pacific east of the Solomons. Although the genus almost certainly occurs in the New Hebrides, no specimens appear to have been collected there up to the present. Of the two known Micronesian species, one is also found in the Philippines and the other is a related species. The early descriptions of the Fijian species were based on rather inadequate material, and therefore I am redescribing these and indicating their inter-relationship by a key to the species.

The Fijian species are difficult to separate; one finds that such characters as leaf-texture, shape, and size, position of inflorescence, length of peduncle, size and internal pubescence of perianth, shape of faucial scales, length of filaments, and pubescence of ovary are variable within a species and not very dependable. The only specific characters which are more or less constant appear to be the 4- or 5-merous condition of the flower, the external pubescence of the perianth (in one species), the degree of persistence of the floral bracts and their size, and, in some cases, the length of petioles.

#### Key to the Fijian species

Inflorescence spicate or pseudocapitate, the flowers occupying the ultimate 5–15 mm., the bracts none or very soon caducous; perianth 5-merous; fruit thick-walled, the pericarp woody; seaside plants ..... 1. *P. disperma.*

Inflorescence capitate, the flowers congested on a flattened or convex or subglobose receptacle, often enveloped by bracts (these sometimes soon caducous); fruit usually thin-walled, the pericarp succulent; forest plants.

Perianth conspicuously pale-pilose without, 5-merous ..... 2. *P. pubiflora.*

Perianth glabrous without, 4-merous.

Leaf-blades subsessile (petiole 1–2 mm. long), subcordate at base; inflorescences terminal or axillary on foliage-branchlets; floral bracts conspicuous, persistent past anthesis.

Perianth 37–43 mm. long; floral bracts (10–) 15–20 mm. long, (8–) 12–20 mm. broad; leaf-blades 8–12 cm. long, 2.5–4 cm. broad. ..... 3. *P. pulchra.*

Perianth 45–60 mm. long; floral bracts 7–10 mm. long, about 9 mm. broad; leaf-blades 9–20 cm. long, 3–7.5 cm. broad ..... 4. *P. ixorioides.*

Leaf-blades petiolate (petiole at least 3 mm. long, sometimes 2 mm. in *P. lanceolata*), sometimes subcordate at base but then obviously petiolate.

Floral bracts persistent past anthesis, often present in fruiting specimens.

Flowers often 2 or 3 per inflorescence, sometimes several; fruits usually solitary; floral bracts 4–6, the inner 3 or 4 subequal in size, oblong-ovate, longer than broad ..... 5. *P. montana.*

Flowers (5–) 10–20 per inflorescence; fruits several per head; floral bracts 2, ovate or broadly ovate, usually broader than long.

Leaf-blades chartaceous or subcoriaceous, elliptic-ovate or oblong-elliptic, 3 or 4 times as long as broad; floral bracts 6–12 mm. long, 8–16 (–21) mm. broad. 6. *P. glabra.*

Leaf-blades submembranous or papyraceous, lanceolate-oblong, 5 or 6 times as long as broad; floral bracts 5–8 mm. long and broad ..... 7. *P. angustifolia.*

Floral bracts caducous before anthesis.

Perianth 35–55 mm. long; flowers 6–25 (–35) per inflorescence; leaf-blades 7–20 (–24) cm. long, 2.5–8 (–11.5) cm. broad ..... 8. *P. acuminata.*

Perianth 27–30 mm. long; flowers usually 3 or 4 per inflorescence; leaf-blades 4–8.5 cm. long, 1–2.2 cm. broad ..... 9. *P. lanceolata.*

1. **Phaleria disperma** (Forst. f.) Baill. in Adansonia **11**: 318. 1875; Gilg in E. & P. Nat. Pfl. III. **6a**: 225. 1894.

*Dais disperma* Forst. f. Fl. Ins. Austr. Prodr. 33. 1786.

*Leucosmia Burnettiana* Benth. in Lond. Jour. Bot. **2**: 231. 1843; Benth. Bot. Voy. Sulphur 179. *pl. 57* (in some copies). 1846; Meisn. in DC. Prodr. **14**: 603. 1857; Seem. in Bonplandia **9**: 258. 1861; A. Gray in Jour. Bot. **3**: 306. 1865; Drake, Ill. Fl. Ins. Mar. Pac. 281. 1892.

*Drymispermum Forsteri* Meisn. in DC. Prodr. **14**: 605. 1857.

*Drymispermum Billardieri* Dec. Bot. Voy. Venus 16. *pl. 12* (in Atlas). 1864.

*Leucosmia ovata* Dec. Bot. Voy. Venus 17. 1864.

*Drymispermum Burnettianum* Seem. Fl. Vit. 208. 1867.

*Phaleria Burnettiana* Knuth in Handb. d. Blutenbiol. **3**: 522. 1904; Christoph. in Bishop Mus. Bull. **154**: 19. 1938.

Seaside shrub or small tree, up to 8 m. high, the branchlets stout, subterete, rugulose when dried; petioles rugulose, shallowly canaliculate, 7–10 mm. long; leaf-blades subcarnose, dark green and shining when fresh, papyraceous and yellowish green when dried, oblong, 8–16 cm. long, 5–9.5 cm. broad, rounded to obtuse at base, acute or cuspidate at apex, the costa shallowly canaliculate above, prominent beneath, the secondary nerves 6–8 per side, spreading, prominulous or nearly plane above, sharply elevated beneath, the veinlet-reticulation prominulous or plane on both surfaces; inflorescences terminal on foliage-branchlets, solitary or rarely paired, spicate or pseudocapitate, the peduncle similar to the branchlets, 1.5–5 cm. long, usually bearing 2 inconspicuous oblong-lanceolate bracteoles about 2 mm. long near its base, the floral bracts apparently 2, soon caducous; flowers 10–15 per inflorescence, congested on a rachis 5–15 mm. long; perianth 40–53 mm. long, minutely pale-puberulent within, the lobes 5, elliptic-oblong, 6–9 mm. long, 3–5 mm. broad, obtuse at apex, minutely puberulent within, the faucial scales obscure, membranous, oblong-deltoid, 0.5–0.8 mm. long, obtuse at apex, sometimes apparently lacking; stamens 10, the filaments 0.5–4 mm. long, the anthers oblong, 1.6–2.7 mm. long; disk membranous, 0.5–1 mm. high, undulate at apex; ovary obscurely setose distally with pale hairs 0.3–0.7 mm. long, the stigma oblong-ellipsoid, about 2.5 mm. long; fruit at maturity ovoid-ellipsoid, 14–22 mm. long, 11–20 mm. broad, strongly rugose when dried, rounded at base, often subacute at apex, the pericarp woody, 4–6 mm. thick, the seeds 2 or rarely 1, about 7 mm. long and 6 mm. broad, the testa thin.

OVALAU: *Seemann 383* (GH); north of Levuka, *Gillespie 4491* (Bish, GH, NY, UC) (on seaside cliffs). VANUA MBALAVU: Northern limestone section, *Smith 1495* (Bish, GH, NY, UC, US) (shrub 4 m. high, on seaside cliffs; perianth white; native name: *sinu*). KAMBARA: *Bryan 496* (A, Bish) (tree 5–8 m. high, near beach; bark nearly smooth, light brown; sapwood moderately thick, cream; heartwood yellow-brown; native name: *sinu ndina*).

In addition to the cited specimens, I have seen material of the *U. S. Exploring Expedition* (GH) and *Harvey* (NY) from Samoa and Tonga; Seemann also mentions the species from Viti Levu and gives the native names of *sinu ndina* and *sinu ndamu*.

Gray (in Jour. Bot. **3**: 305. 1865) first pointed out the fact that Forster's concept of *Dais disperma* appeared to be based on a mixture. He suggested that the specific name be maintained for the seacoast plant with 5-merous flowers, which had been subsequently described by Bentham as *Leucosmia Burnettiana*. Nevertheless, Gray did not formally transfer the specific epithet *disperma* to *Leucosmia*, which he maintained as a genus while pointing out that it should probably be reduced to *Drymispermum*. Gray then proceeded to describe a new species, *Leucosmia acuminata*, which he supposed to be the second element in Forster's concept. This typification of *Dais disperma* as synonymous with *Leucosmia Burnettiana* has been followed by most subsequent authors.

*Drymispermum Billardieri* is based on specimens collected in Tonga, *Leucosmia ovata* on a plant from Ovalau in Fiji; the identity of these plants with *Phaleria disperma* has been discussed at some length by Baillon (in Adansonia **11**: 317–319. 1875).

The seacoast plant which I have described above is an unmistakable species, clearly distinguished from others of the genus by having its flowers loosely arranged rather than strictly capitate. Bentham proposed to base his genus *Leucosmia* upon it because of the 5-merous flowers, the presence of faucial scales, the shape of the stigma, and the drupaceous fruit. These characters do not differentiate the species from others of *Phaleria* (or *Drymispermum*), since 5-merous flowers occur in other species and faucial scales are the rule.

2. **Phaleria pubiflora** (A. Gray) Gilg in E. & P. Nat. Pfl. III. **6a**: 225. 1894.

*Leucosmia pubiflora* A. Gray in Jour. Bot. **3**: 306. 1865; Drake, Ill. Fl. Ins. Mar. Pac. 281. 1892.

*Drymispermum pubiflorum* Seem. Fl. Vit. 208. 1867.

Small tree, often cauliflorous, the branchlets slender, subterete, rugulose, cinereous; petioles shallowly canaliculate, 3–5 mm. long; leaf-blades subcoriaceous or chartaceous, ovate-oblong or ovate-lanceolate, 8–12 cm. long, 2.5–4.5 cm. broad, rounded or broadly obtuse at base, gradually narrowed to an acute or subacuminate apex, the costa shallowly canaliculate above, prominent beneath, the secondary nerves about 6 per side, arcuate, with the veinlet-reticulation prominulous on both surfaces; inflorescences axillary or arising from defoliate branchlets or main stem, the peduncles apparently fasciculate, 10–22 mm. long, with several inconspicuous deltoid bracteoles 0.5–1 mm. long near base, the floral bracts soon deciduous, probably 2, the receptacle convex; flowers 4–6 or perhaps more per inflorescence; perianth 35–40 mm. long, very slender toward base, pale-pilose without with weak hairs 0.2–0.5 mm. long, pale-tomentellous within, the lobes 5, oblong, 5–6 mm. long, 2–3 mm. broad, obtuse, puberulent on both surfaces, the faucial scales inconspicuous, deltoid, about 0.5 mm. long, subacute; stamens 10, the filaments 0.5–3 mm. long, the anthers oblong, about 1 mm. long; disk membranous, about 1.5 mm. high, crenulate at apex; ovary setulose distally with pale hairs about 0.7 mm. long, the stigma oblong-ellipsoid, about 2 mm. long; young fruit ovoid, 12–15 mm. long, 5–7 mm. broad, obtuse at base, acute at apex, the seed apparently solitary.

VITI LEVU: Tholo North: Korovou, east of Tavua, alt. 60–150 m., *Degener 14951* (A) (cauliflorous tree 3 m. high, in dry dark ravine).

Originally based on a specimen of the U. S. Exploring Expedition, which is probably deposited in the herbarium of the British Museum, this species was reported by Seemann from Kandavu, on the basis of his no. *379*. Although I have seen neither of the early collections, the Degener plant agrees with the descriptions in its pilose 5-merous perianth and seems certainly to represent the species. The above description is drawn up from the latter specimen, the original descriptions omitting references to dimensions.

3. **Phaleria pulchra** Gillespie in Bishop Mus. Bull. **91**: 21. *pl. 23.* 1932.

VITI LEVU: Naitasiri: Tamavua woods, 7 miles from Suva, alt. 150 m., *Gillespie 2141* (A, Bish, TYPE, GH, UC).

Since no material of this species has been collected since the type, the original description is adequate. The species is well marked by its very short petioles, subcordate leaf-blades, and conspicuous floral bracts.

4. **Phaleria ixorioides** Fosberg in Bull. Torrey Bot. Club **67:** 418. 1940.

WAYA (Yasawa Group): North of Yalombi, along Olo Creek, *St. John 18123* (Bish, TYPE) (small tree 5 m. high, in woods by stream; flowers fragrant, the perianth white; native name: *tarutaru*). VITI LEVU: Serua: Vatutavathe, vicinity of Ngaloa, alt. 150 m., *Degener 15202* (A) (tree 4–6 m. high, in forest; flowers abundant, in dense clusters, the perianth white).

The original description amply portrays this species, which is closely related only to *P. pulchra,* from which it is distinguished primarily by the dimensional characters mentioned in the key.

5. **Phaleria montana** (Seem.) Gilg in E. & P. Nat. Pfl. III. **6a:** 225. 1894.

*Drymispermum montanum* Seem. in Bonplandia **9:** 258, nomen. 1861; Mission to Viti 440, nomen. 1862; Fl. Vit. 209. *pl. 54.* 1867.

*Leucosmia montanum* Benth. & Hook. ex Drake, Ill. Fl. Ins. Mar. Pac. 281. 1892.

Small slender tree, the branchlets subterete, rugulose, cinereous, often swollen at nodes; petioles rugulose, canaliculate, 3–6 mm. long; leaf-blades chartaceous, olivaceous or dark green when dried, elliptic-ovate, 7–11 cm. long, 2.5–5 cm. broad, obtuse at base, acute or gradually short-acuminate at apex, the costa impressed or nearly plane above, prominent beneath, the secondary nerves 6–8 per side, arcuate, prominulous above, acutely elevated beneath, the veinlet-reticulation prominulous on both surfaces; inflorescences axillary toward apices of branchlets, solitary or aggregated in groups of 2–5, the peduncle 3–15 mm. long, with a few deltoid to linear bracteoles 1–2 mm. long near its base, sometimes bibracteolate near middle, the bracteoles caducous; floral bracts 4–6, imbricate, papyraceous or submembranous, oblong-ovate, the outer 2 or 3 about 4 mm. long and 3 mm. broad, the inner 3 or 4 obscurely nerved, 9–14 mm. long, 5–8 mm. broad, rounded or obtuse at apex; receptacle convex, the flowers often 2 or 3 per inflorescence, sometimes several; perianth slender, puberulent within, the lobes 4, ovate, acute, puberulent on both surfaces, the faucial scales oblong, erose-truncate at apex; stamens 8, the anthers oblong; ovary glabrous or distally sparsely setose with a few pale hairs; fruit usually 1 per inflorescence at maturity, oblong-ellipsoid, 8–12 mm. long, 7–10 mm. broad, rounded at base, obtuse at apex, the seeds 1 or 2.

VITI LEVU: Tholo North: Nandarivatu, alt. 800 m., *Gillespie 4186* (Bish, GH, NY, UC) (in wooded ravines at head of escarpment north of Government house); Ra: Mataimeravula, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15336* (A) (tree 3 m. high, in forest; fruit red, shiny), *Degener 15426* (A) (in forest); Tuvavatu, near Rewasa, alt. 50–200 m., *Degener 15377* (A) (small tree or large shrub, in forest; native name: *sinu matiavi*).

The cited specimens are the only ones I have seen which agree with Seemann's description and plate in having several, rather than two, floral bracts. Although I have not seen the type collection (*Seemann 380* from Kandavu), the species seems to be well characterized by these bracts, which differ in proportions from those of *P. glabra.* In other respects the two species are difficult to separate. Mature flowers are not available to me, and Seemann did not give their dimensions.

6. **Phaleria glabra** (Turrill) Domke in Bibl. Bot. **27**(Heft 111): 55. 1934.

*Leucosmia glabra* Turrill in Jour. Linn. Soc. Bot. **43:** 37. 1915.

Slender shrub or small tree, the branchlets subterete, rugulose; petioles canaliculate, rugulose, 5–12 mm. long; leaf-blades subcoriaceous to papyraceous, usually olivaceous when dried, ovate-elliptic or oblong, 7–21 cm. long, (2–) 3–9 cm. broad, obtuse or acute (rarely rounded) at base, gradually acuminate or cuspidate at apex, often conspicuously recurved at margin, the costa shallowly impressed above, prominent beneath, the secondary nerves 5–10 (–13) per side, arcuate or spreading, prominulous above, slightly elevated beneath, the veinlet-reticulation prominulous or immersed on both surfaces; inflorescences axillary or on defoliate

branchlets, solitary, the peduncle 2–8 mm. long, with several papyraceous deltoid-linear caducous bracteoles 1–3 mm. long toward its base; floral bracts 2, persistent past anthesis, subcoriaceous or papyraceous, broadly ovate, 6–12 mm. long, 8–16 (–21) mm. broad, rounded or rarely subacute at apex, obscurely nerved; receptacle convex or flattened or subcapitate, the flowers (5–) 10–20 per inflorescence; perianth 30–55 mm. long, hispid-pilose or tomentellous within with weak pale hairs 0.5–1 mm. long, the lobes 4, oblong, 4.5–9 mm. long, 2.5–5 mm. broad, obtuse or rounded at apex, puberulent within, the faucial scales oblong or oblong-deltoid, 0.5–1.5 mm. long, subacute to erose-truncate at apex; stamens 8, the filaments slender, 1–3 mm. long, the anthers oblong, 1.2–1.5 mm. long; disk membranous, 1.2–2 mm. high, crenulate at apex; ovary glabrous or sparsely setose distally with a few pale hairs about 0.6 mm. long, the stigma oblong-ellipsoid, 1–3 mm. long; fruits several per inflorescence, oblong-ellipsoid or obovoid, 7–15 mm. long, 5–11 mm. broad, rounded to subacute at base, obtuse at apex, the pericarp thin, the seed 1 or rarely 2.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 750–900 m., *Gillespie 3708* (Bish, GH, UC) (floral bracts green; flowers fragrant, the perianth white), *Gillespie 3987* (Bish, UC), *Gillespie 4199* (Bish, UC), *Degener 14734* (A) (tree 3 m. high, in forest; fruit dark red); Tholo West: Uluvatu, vicinity of Mbelo, near Vatukarasa, *Tabualewa 15562* (A) (native name: *mbuimbuita*); Namosi: Naitarandamu Mt., alt. 1100 m., *Gillespie 3362* (Bish, GH, NY, UC); Rewa: Near Lami, alt. 10 m., *Gillespie 4614* (Bish, UC); Naitasiri: Tamavua woods, alt. 150 m., *Gillespie 2420* (Bish, GH, UC); Nasinu, alt. 150 m., *Gillespie 3583* (Bish, GH, UC) (slender shrub 2 m. high), *Gillespie 3666* (Bish, UC) (fruit bright red). VANUA LEVU: Thakaundrove: Vatunivua-monde Mt., Savu Savu Bay region, alt. 300 m., *Degener & Ordonez 14032* (A), *14035* (A) (shrubs 2 m. high, in dense forest; fruit red); Yanawai River region, Mt. Kasi, alt. 300–430 m., *Smith 1819* (Bish, NY) (slender shrub 3 m. high, in dense forest; fruit red).

Although I have not seen the type collection of this species (*im Thurn 12* from Kandavu), the cited specimens agree well with the original description; Turrill also remarks that the species is common about Nandarivatu. The species is very variable in leaf-size and texture, but the broad persistent paired bracts, borne on short peduncles arising from the slender branchlets, adequately characterize it.

7. **Phaleria angustifolia** A. C. Sm. in Bishop Mus. Bull. **141**: 101. *f. 53.* 1936.

VANUA LEVU: Mbua: Southern slope of Mt. Seatura, alt. 500 m., *Smith 1685* (Bish, TYPE, GH, NY, UC, US) (slender tree 4 m. high; flowers borne on trunk and branches; perianth white; native name: *numbu*).

Since only one collection of this species is known, the original description is adequate. It is a species showing affinities with both *P. glabra* and *P. acuminata,* but readily recognized by its narrow leaves and small but persistent floral bracts.

8. **Phaleria acuminata** (A. Gray) Gilg in E. & P. Nat. Pfl. III. **6a**: 225. 1894; Christoph. in Bishop Mus. Bull. **154**: 18. 1938.

*Leucosmia acuminata* A. Gray in Jour. Bot. **3**: 306. 1865; Drake, Ill. Fl. Ins. Mar. Pac. 281. 1892.

*Drymispermum subcordatum* Seem. in Bonplandia **9**: 258, nomen. 1861; Mission to Viti 440, nomen. 1862; Fl. Vit. 209. *pl. 53.* 1867.

*Drymispermum acuminatum* Seem. Fl. Vit. 209. 1867.

*Leucosmia subcordata* Benth. & Hook. ex Drake, Ill. Fl. Ins. Mar. Pac. 281. 1892.

*Phaleria subcordata* Gilg in E. & P. Nat. Pfl. III. **6a**: 225. 1894.

Slender shrub or tree, to 9 m. high, often cauliflorous, the branchlets slender, subterete; petioles rugulose, canaliculate, 4–17 mm. long; leaf-blades chartaceous or papyraceous or submembranaceous, usually olivaceous when dried, ovate-elliptic or oblong, 7–20 (–24) cm. long, 2.5–8 (–11.5) cm. broad, subacute to subcordate at base, acute or gradually acuminate or cuspidate at apex, the costa slightly im-

pressed above, prominent beneath, the secondary nerves 7–12 per side, arcuate, spreading or ascending, prominulous or conspicuously elevated on both surfaces, the veinlet-reticulation prominulous on both surfaces; inflorescences axillary or subterminal, often on defoliate branches or trunk, solitary or paired, the peduncle 3–10 (–30) mm. long, with several inconspicuous oblong-linear or deltoid bracteoles 0.5–2 mm. long toward its base; floral bracts 2, papyraceous, orbicular-ovate, about 3 mm. long and broad, rounded at apex, caducous before anthesis; receptacle convex or subglobose, the flowers 6–25 (–35) per inflorescence; perianth 35–55 mm. long, sparsely pilose within with weak hairs 0.5–1 mm. long, the lobes 4, oblong or elliptic-oblong, 6–9 mm. long, 2–5 mm. broad, obtuse or rounded at apex, puberulent within and sometimes without, the faucial scales membranous, oblong, 0.7–1.3 mm. long, erose-truncate to subacute at apex; stamens 8, the filaments 0.5–4.5 mm. long, the anthers oblong, 1–1.7 mm. long; disk membranous, 0.7–1.5 mm. high, undulate at apex; ovary distally pilose with weak pale hairs 0.5–0.8 mm. long, sometimes essentially glabrous, the stigma oblong-ellipsoid, 1–4.5 mm. long; fruits at maturity usually 3–6 per inflorescence, obovoid or subglobose-ellipsoid, usually 2-seeded and slightly flattened, sometimes 1-seeded and slightly falcate, (7–) 16–28 mm. long, (6–) 10–20 mm. broad, rounded or obtuse at base, obtuse or subacute at apex, the pericarp thin, fleshy.

WAKAYA: *Beck* (Bish). VANUA LEVU: Thakaundrove: Eastern drainage of Yanawai River, alt. 90 m., *Degener & Ordonez 14121* (A) (cauliflorous shrub to 3 m. high, in open forest; perianth white); southern slopes of Korotini Range, alt. 300–650 m., *Smith 488* (Bish, GH, NY, UC, US) (tree 5 m. high; flowers fragrant, the perianth pure white; native name: *songo ni wai*), *Smith 494* (Bish, GH, NY, UC, US) (shrub 4 m. high; native name: *toatoa*); southwestern slope of Mt. Mbatini, alt. 300–700 m., *Smith 621* (Bish, NY) (slender cauliflorous shrub 1–2 m. high; perianth white), *Smith 672* (Bish, NY) (slender shrub 1 m. high; perianth white; anthers yellow; fruit red); Mt. Mariko, alt. 600–800 m., *Smith 450* (Bish, GH, NY, UC, US) (slender tree 9 m. high; fruit deep red); hills south of Nakula Valley, alt. 10–30 m., *Smith 336* (Bish, GH, NY, UC, US) (slender tree 3 m. high; fruit red); Uluinabathi Mt., Savu Savu Bay region, alt. 90–180 m., *Degener & Ordonez 13930* (A) (slender cauliflorous tree 4 m. high, in dense forest), *Degener & Ordonez 14198* (A) (tree or shrub 2 m. high, in open forest; fruit red, shiny); Maravu, near Salt Lake, alt. 75 m., *Degener & Ordonez 14235* (A). TAVEUNI: Borders of lake east of Somosomo, alt. 700–900 m., *Smith 928* (Bish, NY) (shrub 3 m. high, in dense forest; perianth white). MOALA: Near Maloku, alt. 300 m., *Smith 1338* (Bish, NY) (slender tree 7 m. high, in forest; fruit deep red; native name: *kau ndamu*). YANGASA CLUSTER: Navutu i loma, *Bryan 456* (A, Bish) *457* (A, Bish) (shrubs or small trees 3–4 m. high; fruit red to purple); Navutu i ra, *Bryan 467* (A, Bish) (scandent tree 4–5 m. high; fruit green to red-purple). WITHOUT DEFINITE LOCALITY: *Tothill 546* (Bish).

Seemann has reported this species from Viti Levu, from which the Tothill specimen presumably comes, but it is noteworthy that the species appears to be abundant on Vanua Levu and rare on the larger island. The cited specimens have been compared with Samoan and Tongan material, including a *U. S. Expl. Exped.* (NY, US) sheet from Samoa which is presumably from the type collection, although Gray reports the species from "Samoan and Fijian Islands." Although the type collections of *Drymispermum subcordatum* (*Seemann 381* and *383* [in part, presumably] from Rewa, Viti Levu, and Taveuni) have not been seen, several of the cited specimens precisely agree with Seemann's plate.

I have attempted in vain to find characters which would serve to distinguish *P. subcordata* from *P. acuminata*. The leaf-base is variable, even on the same individual; the degree of pubescence inside the perianth and on the ovary is also variable, the ovary being from glabrous to distally setose on plants which are otherwise quite identical. Number of flowers per inflorescence is not dependable since the inflorescences associated with the apical leaves generally have 6–10 flowers, whereas those farther down on the branchlets or on the main stems commonly

have 20–35 flowers. The fruits of most Fijian specimens are very large and generally 2-seeded, but the specimens collected by Bryan in the Yangasa Cluster have fairly small fruits, which are usually 1-seeded and not more than 10 mm. long at maturity. However, in all other respects these Bryan collections are similar to others from Fiji. Leaf-texture is variable and is apparently due to shade conditions; however, the leaves are never as thick as those of *P. glabra.*

*Phaleria acuminata,* when non-essential characters are excluded from consideration, is rather weakly characterized by its quickly caducous floral bracts, usually large fruits, and large comparatively thin and usually acuminate leaf-blades. The common names of *sinu matiavi* and *matiavi* are listed by Seemann.

9. **Phaleria lanceolata** (A. Gray) Gilg in E. & P. Nat. Pfl. III. **6a:** 225. 1894.
*Drymispermum lanceolatum* A. Gray in Jour. Bot. **3:** 304. 1865; Seem. Fl. Vit. 208. 1867.
*Leucosmia lanceolata* Benth. & Hook. ex Drake, Ill. Fl. Ins. Mar. Pac. 281. 1892.

Slender shrub, the branchlets rugulose, slightly swollen at nodes; petioles slender, shallowly canaliculate, 2–5 mm. long; leaf-blades chartaceous or papyraceous, oblong-lanceolate, 4–8.5 cm. long, 1–2.2 cm. broad, obtuse at base, gradually narrowed to an acute or subacute apex, the costa slightly impressed above, conspicuous beneath, the secondary nerves 5–8 per side, ascending, with the veinlet-reticulation prominulous on both surfaces; inflorescences terminal or axillary or arising from defoliate branchlets, solitary, the peduncle 2–15 mm. long, with several inconspicuous deltoid-lanceolate bracteoles about 1 mm. long near its base and others to 4 mm. long near middle; floral bracts 2, papyraceous, ovate, 5–6 mm. long and broad, subacute at apex, obscurely nerved, caducous before anthesis; receptacle convex, the flowers usually 3 or 4 per inflorescence; perianth 27–30 mm. long, faintly pale-puberulent within with hairs about 0.5 mm. long, the lobes 4, ovate-oblong, 5–6 mm. long, 3–4 mm. broad, subacute at apex, puberulent within, the faucial scales very inconspicuous or apparently none; stamens 8, the filaments 0.6–1 mm. long, the anthers oblong, 1–1.2 mm. long; disk submembranous, about 0.6 mm. high, faintly crenulate at apex; ovary faintly hispid distally with a few pale hairs about 0.5 mm. long, the stigma oblong-ellipsoid, about 2 mm. long.

VANUA LEVU: Mathuata: "Mountains behind Mathuata" [presumably the mainland opposite the islet of that name], *U. S. Expl. Exped.* (US, TYPE); Mbua: Ruku Ruku Bay, *Parham 11* (A) (rambling shrub).

This attractive and apparently rare shrub is readily distinguished from *P. acuminata* by the characters mentioned in the key.

## LYTHRACEAE

**Cuphea carthagenensis** (Jacq.) Macbr. in Field Mus. Publ. Bot. **8:** 124. 1930.

VITI LEVU: Nandronga: Government Farm, Singatoka, *Greenwood 786B* (A) (in wet places in fields).

This American weed has not previously been reported from Fiji, although it is known from Samoa and other Pacific groups, having usually been reported as *C. balsamona* Cham. & Schlecht. The present determination is by Dr. R. C. Foster.

The family Lythraceae, to the best of my knowledge, has not previously been recorded from Fiji.

**Pemphis acidula** Forst. Char. Gen. 68. *pl. 34.* 1776; Guillaumin in Jour. Arnold Arb. **12:** 261. 1931; Christoph. in Bishop Mus. Bull. **128:** 154. 1935.

VANUA LEVU: Thakaundrove: Waina, Maravu, near Salt Lake, *Degener & Ordonez 14165* (A), *14189* (A) (small trees, along coast; native name: *sanggale*). KORO:

East coast, *Smith 1033* (GH, NY) (shrub 4 m. high, among rocks along shore; native name: *sanggali*). FULANGA: *Smith 1202* (GH, NY) (gnarled tree 1–2 m. high, on limestone cliff in lagoon; native name: *ngingia*).

Although *P. acidula* is reported as common in many Pacific groups, this is apparently the first record of it from Fiji.

**Lawsonia inermis** L. Sp. Pl. 349. 1753; Safford in Contr. U. S. Nat. Herb. **9**: 306. 1905.

VITI LEVU: Rewa: Vicinity of Suva, *Degener & Ordonez 13627* (A) (cultivated tree).

It seems advisable to record this widely cultivated plant from Fiji, as it may become naturalized; it has doubtless been introduced from India.

## COMBRETACEAE

**Terminalia vitiensis** sp. nov.

Arbor multiramosa ad 8 m. alta floribus intus exceptis glabra, ramulis subteretibus cinereis rugosis; foliis apicem ramulorum versus confertis, petiolis gracilibus 8–15 mm. longis superne anguste alatis, laminis chartaceis in sicco viridibus ellipticis vel subobovato-ellipticis, 4–7 cm. longis, 1.5–3.2 cm. latis, basi attenuatis et in petiolum decurrentibus, apice rotundatis vel leviter emarginatis vel obtusis, margine integris et paullo incrassatis, supra minute pustulatis, costa supra paullo subtus valde elevata, nervis lateralibus utrinsecus 4–7 marginem versus curvatis utrinque prominulis, rete venularum laxo utrinque subimmerso vel leviter prominulo; inflorescentiis axillaribus racemosis 6–10 cm. longis, pedunculo brevi et rhachi gracilibus, floribus numerosis pedicellatis, pedicellis gracilibus 2–4 mm. longis apicem versus incrassatis; calyce infundibuliformi 3–4 mm. longo tenuiter carnoso intus pallide tomentello, lobis 5 acutis deltoideis 1.5–2 mm. longis et latis; lobis disci 5 carnosis hirsutis; staminibus 8–11, filamentis filiformibus glabris sub anthesi circiter 7 mm. demum ad 10 mm. longis, antheris oblongis 0.8–1 mm. longis, loculis apicem versus distinctis; ovarii rudimento nullo vel subfiliformi glabro ad 7 mm. longo.

VITI LEVU: Serua: Near Mt. Ngamo, vicinity of Ngaloa, alt. about 75 m., *Degener 15081* (A, TYPE), Apr. 25, 1941 (densely branched tree about 8 m. high, in forest; flowers pale yellow).

*Terminalia vitiensis* is of the relationship of the Samoan *T. Richii* A. Gray, from which it differs in its essentially rounded rather than acuminate leaf-apex, its glabrous rather than tomentellous rachis, and its pedicellate rather than sessile flowers.

## MYRTACEAE

By E. D. MERRILL AND L. M. PERRY

### SYZYGIUM Gaertner

Many generic concepts, both limited and comprehensive, have been published for the fleshy-fruited Myrtaceae. Of these the largest Old World genus is *Syzygium* Gaertner. In our study of the Bornean material, we did not accept the traditional limits of the genus. After trying to evaluate the characters and variations in the group, we adopted a broadened concept for *Syzygium* based on Gaertner's original description of the fruit rather than on the more fickle floral characters which had been most influential in determining the traditional status of the genus. At that time *Pareugenia* Turrill came to our attention. Apart from the united filaments, the material looked so much like *Syzygium fastigiatum* (Bl.) Merr. & Perry in all its other characters that we were dubious of its generic distinction. However, since we had found no other instance of the coalescence or

connate condition of the filaments, we decided to let it wait for future consideration. In our study of *Syzygium* in Papuasia we found more than one species with filaments united in varying degrees. *Syzygium Schumannianum* (Nied.) Diels (*Eugenia neurocalyx* K. Schum.) is described as having stamens connate in four phalanges; we have seen no flowering material. In *Eugenia coalita* Greves, Jour. Bot. **61**: Suppl. 15. 1923, according to the description, the outer filaments have coalesced and are subpetaloid. We found a similar situation in *S. spectabile* Merr. & Perry; the outer filaments are united in varying degrees more or less half their length, the inner stamens are single or in tiny phalanges of 2 or 3. It must be admitted that in these larger flowers the stamens appear for the most part *en masse* rather than broken up into phalanges; nevertheless, this is a condition of coalescence of the filaments whether the stamens appear as a mass or whether they appear to be broken up into from four to sixteen phalanges, or are both single and in phalanges as in *Pareugenia oligadelpha* Christophersen. That is to say, we consider this a highly variable character and for this reason scarcely worthy in generic consideration. Until further collections offer some more stable character we believe the species ascribed to *Pareugenia* Turrill belong in our concept of the genus *Syzygium* Gaertner.

**Syzygium Brackenridgei** (A. Gray) C. Muell. in Walp. Ann. **4**: 838. 1857.

*Eugenia Brackenridgei* A. Gray, Bot. U. S. Expl. Exped. **1**: 521. *pl. 61A*. 1854.

*Jambosa Brackenridgei* Brongn. & Gris in Bull. Soc. Bot. Fr. **12**: 181. 1865.

*Pareugenia Brackenridgei* A. C. Sm. in Bishop Mus. Bull. **141**: 109. 1936.

OVALAU: *U. S. Expl. Exped.* (GH). KANDAVU: Mount Mbuke Levu, dense forest, alt. 200–500 m., *Smith 239* (GH). WITHOUT DEFINITE LOCALITY: *Horne 689, 843, 867, 936* (all GH).

**Syzygium oblongifolium** (Gillespie) Merr. & Perry, comb. nov.

*Pareugenia oblongifolia* Gillespie in Bishop Mus. Bull. **83**: 23. *f. 29*. 1931.

VANUA LEVU: Mbua: Lower Wainunu River valley, thin forest, alt. 0–200 m., *Smith 1723* (GH). WITHOUT DEFINITE LOCALITY: *Horne* (GH).

**Syzygium Imthurnii** (Turrill) Merr. & Perry, comb. nov.

*Pareugenia Imthurnii* Turrill in Jour. Linn. Soc. Bot. **43**: 21. 1915; in Hook. Ic. Pl. **31**: *pl. 3004*. 1915.

VITI LEVU: Lautoka: Mountains near Lautoka, *Greenwood 36* (A).

**Syzygium oligadelphum** (Christoph.) Merr. & Perry, comb. nov.

*Pareugenia oligadelpha* Christoph. in Bishop Mus. Bull. **154**: 20. *f. 6*. 1938.

SAMOA: UPOLU. Specimen not seen.

*Syzygium nomoa* Guillaumin in Jour. Arnold Arb. **12**: 258. 1931, of the New Hebrides, also belongs in this group with stamens more or less united into phalanges, although this fact is overlooked in the original description.

**Syzygium Wolfii** (Gillespie) Merr. & Perry, comb. nov.

*Eugenia Wolfii* Gillespie in Bishop Mus. Bull. **83**: 22. *f. 28*. 1931; A. C. Sm. op. cit. **141**: 106. 1936.

VANUA LEVU: Mathuata: Wainunu-Ndreketi Divide, alt. 200–300 m., *Smith 1854* (GH) (slender tree 20 m. high); Mbua: *Horne 1100* (GH).

**Syzygium curvistylum** (Gillespie) Merr. & Perry, comb. nov.

*Eugenia curvistyla* Gillespie in Bishop Mus. Bull. **83**: 21. *f. 26*. 1931.

VANUA LEVU: Thakaundrove: Southwestern slope of Mount Mbatini, dense forest, alt. 300–700 m., *Smith 609* (GH) (tree 18 m. high); Mbua: Upper Ndama River valley, dense forest, 100–300 m., *Smith 1598* (GH) (tree 10 m. high; flower-buds pale green). TAVEUNI: Western slope, between Somosomo and Wairiki, woods along stream, alt. 300 m., *Smith 839* (GH) (tree 9 m. high; flowers white; fruit deep purple).

**Syzygium Seemannianum** Merr. & Perry, nom. nov.

*Eugenia rivularis* Seem. Fl. Vit. 80. 1865; non *Syzygium rivulare* Vieill. ex Guillaumin in Bull. Soc. Bot. Fr. **85**: 645. 1938.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, along streams, occasionally on flooded land, *Degener 14272a* (A) (shrub or small tree 1–3 m. high; flowers white with greenish yellow tinge; fruit black); Serua: Navua River, *Seemann 162* (GH, ISOTYPE). WITHOUT DEFINITE LOCALITY: *Horne 920* (GH).

**Syzygium durifolium** (A. C. Sm.) Merr. & Perry, comb. nov.

*Eugenia durifolia* A. C. Sm. in Bishop Mus. Bull. **141**: 105. *f. 56.* 1936.

TAVEUNI: Borders of lake east of Somosomo, dense forest, alt. 700–900 m., *Smith 919* (GH, ISOTYPE).

**Syzygium diffusum** (Turrill) Merr. & Perry, comb. nov.

*Eugenia diffusa* Turrill in Jour. Linn. Soc. Bot. **43**: 20. 1915; A. C. Sm. in Bishop Mus. Bull. **141**: 107. 1936.

*Syzygium aneityense* Guillaumin in Jour. Arnold Arb. **12**: 256. 1931.

KANDAVU: Mount Mbuke Levu, dense forest, alt. 200–500 m., *Smith 224* (GH) (tree 20 m. high; fruit on trunk, orange-colored). TAVEUNI: Western slope, between Somosomo and Wairiki, forest, alt. 500–900 m., *Smith 755, 769, 797* (all GH) (tree 13–20 m. high; flower-buds yellowish; fruit red). KORO: Eastern slope of main ridge, dense forest, alt. 300–500 m., *Smith 994* (GH) (tree 18 m. high; stamens white; fruit red; lumber valued for underwater uses). WITHOUT DEFINITE LOCALITY: *Horne 443* (GH).

Superficially the species closely resembles *Syzygium corynocarpum* (A. Gray) C. Muell. On comparing the flowers, however, it will be found that the lower part of the calyx in the latter species is much longer and tends to be fusiform-clavate in bud, crowned by a globose apex. On the other hand, in *S. diffusum* the base of the calyx is relatively short above the articulation with the pedicel, the bud being much nearer pyriform. We have been unable to distinguish the Fijian collections of this from an isotype of *S. aneityense* Guillaumin of the New Hebrides.

**Syzygium Grayi** (Seem.) Merr. & Perry, comb. nov.

*Eugenia Grayi* Seem. Fl. Vit. 79. *pl. 16.* 1865.

VITI LEVU: Tholo North: Nakutu, Navai, alt. 750–900 m., *Degener 15028* (A); Mataivisai, Navai, alt. 750–900 m., *Degener 15029a* (A); Nandrau, vicinity of Nandarivatu, in forest, alt. 750–900 m., *Degener 14092* (A); Mount Matomba, Nandala, vicinity of Nandarivatu, in rich forest, alt. 750–900 m., *Degener 14455* (A). KANDAVU: *Seemann 163* (GH, ISOTYPE). VANUA LEVU: Thakaundrovė: Between Valanga and Valethi, Savu Savu Bay region, alt. 0–400 m., *Degener & Ordonez 14039* (A); Maravu, near Salt Lake, forest, alt. 0–450 m., *Degener & Ordonez 14161* (A); Yanawai River region, Mount Kasi, dense forest, alt. 300–430 m., *Smith 1803* (GH) (slender tree 5 m. high; calyx and petals pinkish; stamens white, fruit rich pink); hills between Vatukawa and Wainingio Rivers, Ndrekeniwai Valley, forest, alt. 200–500 m., *Smith 592* (GH). WITHOUT DEFINITE LOCALITY: *Horne 742, 758* (both GH).

The collections from Vanua Levu show considerable variation in the length of the petiole, one collection having practically sessile leaves, the others with petioles up to 1.5 or almost 2 cm. long, with the leaf-base varying from cordate to cuneate. These are wide differences to allow in one specific concept, but the inflorescences seem to be similar and we believe that further material is needed before we can be sure of the limits of species variation here.

**Syzygium simillimum** Merr. & Perry, sp. nov.

Arbor parva 3 m. alta; ramulis teretibus brunnescentibus; foliis coriaceis impellucidis pallide viridescentibus sessilibus oblongis vel oblongo-lanceolatis, 12–17 cm. longis, 3–5 cm. latis, basi cordatis, apice obtuse acuminatis vel acutiusculis, costa supra leviter canaliculata subtus elevata, nervis primariis utrinque incon-

spicuis patentibus circiter 5–10 mm. inter se distantibus paullo irregularibus in venam intramarginalem inconspicuam 2–3 mm. a margine confluentibus; petiolo brevissimo; inflorescentiis terminalibus fere a basi ramosis vel breviter pedunculatis, ± 2.5 cm. longis, paucifloris, ramis ± 5 mm. longis; floribus breviter pedicellatis, crebre et minute glanduloso-pustulatis; alabastris pyriformibus 6 mm. longis in parte superiore 3–4 mm. diametro; calycis lobis 1.5 mm. longis obtusiusculis; petalis staminibusque non visis; stylo ± 1.5 cm. longo; fructibus circiter 8 mm. longis subgloboso-ovoideis calycis lobis coronatis.

VANUA LEVU: Thakaundrove: Eastern drainage of Yanawai River, in dark forest, alt. 20–160 m., *Degener & Ordonez 14093* (A, TYPE), Jan. 12, 1941 (sparingly branched tree 3 m. high; sepals pink; petals pale green; fruit dark red).

The species shows a remarkably strong resemblance to *Syzygium Beccarii* (Ridl.) Merr. & Perry, of Sarawak, Borneo. It differs in that the leaves show no glandular punctations, the venation is less obvious, and the primary veins are somewhat more remote. The flower-buds are slightly narrower and the calyx-lobes a little longer than in the Bornean collection.

**Syzygium nidie** Guillaumin in Jour. Arnold Arb. **12**: 257. 1931.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, dense forest, alt. 750–900 m., *Degener 14550* (A); Sovutawambu, near Nandarivatu, alt. 750–800 m., *Degener 14665* (A).

The flowers are very slightly smaller, and the inflorescences are scarcely as long and a little more compact than those of the type-collection from Aneityum in the New Hebrides. The specimens, however, do not show any specific differences.

**Syzygium Richii** (A. Gray) Merr. & Perry, comb. nov.

*Eugenia Richii* A. Gray, Bot. U. S. Expl. Exped. **1**: 510. *pl. 58*. 1854; Seem. Fl. Vit. 77. 1865.

*Jambosa Richii* C. Muell. in Walp. Ann. **4**: 849. 1857.

VITI LEVU: Ra: Vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15490* (A); Namosi: Between Namosi and Navua River, *Seemann 164, 165* (both GH). MOALA: Forest near Maloku, alt. 200 m., *Smith 1380* (GH) (tree 10 m. high; petals white; filaments bright yellow). VANUA LEVU: Thakaundrove: Savu Savu Bay region, alt. 0–150 m., *Degener & Ordonez 13884* (A); Mbua: Upper Ndama River valley, dense forest, near streams, alt. 100–300 m., *Smith 1693* (GH). VANUA MBALAVU: Northern limestone section, alt. 0–200 m., *Smith 1498* (GH) (tree 9 m. high; petals cream-white; filaments yellow). KAMBARA: Limestone formation, forest, alt. 0–100 m., *Smith 1255* (GH) (tree 17 m. high; petals and filaments cream-white). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (GH, ISOTYPES); *Horne 914, 1081* (both GH).

There is considerable variation in the foliage of this material, but we still do not have a sufficient number of collections to determine whether the narrower leaved material is a distinct species or not. We have seen no material of *Eugenia nandarivatensis* Gillespie (in Bishop Mus. Bull. **83**: *22. f. 27.* 1931), but from the figure we suspect it to be a segregate of *Syzygium Richii.* We do not care to try to evaluate it without authentic material for examination. It should be noted that *Eugenia Suzukii* Kaneh., of Palau, is remarkably like *Syzygium Richii;* further material is necessary to determine whether Kanehira's species is specifically different or not.

**Syzygium quadrangulatum** (A. Gray) Merr. & Perry, comb. nov.

*Eugenia quadrangulata* A. Gray, Bot. U. S. Expl. Exped. **1**: 511. 1854; Seem. Fl. Vit. 78. 1865.

*Jambosa quadrangulata* C. Muell. in Walp. Ann. **4**: 849. 1857.

VITI LEVU: Ra: Tuvavatu, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15382* (A). OVALAU: *U. S. Expl. Exped.* (GH, ISOTYPE). WITHOUT DEFINITE LOCALITY: *Horne 340* (GH).

**Syzygium gracilipes** (A. Gray) Merr. & Perry, comb. nov.

*Eugenia gracilipes* A. Gray, Bot. U. S. Expl. Exped. **1**: 513. 1854; Seem. Fl. Vit. 78. *pl. 15*. 1865.

*Jambosa gracilipes* C. Muell. in Walp. Ann. **4**: 849. 1857.

Viti Levu: Tholo North: Mount Matomba, Nandala, vicinity of Nandarivatu, in dense rich forest, alt. 750–900 m., *Degener 14433* (A); Nauwanga, vicinity of Nandarivatu, in dense forest, alt. 750–900 m., *Degener 14808* (A) (tree 2 m. high; fruit red, globose-pyriform, about 4 cm. diameter and 3- or 4-seeded; seeds about 1.5 cm. diameter); Tholo West: Mbuyombuyo, forest, *Tabualewa 15591, 15606* (both A) (fruit bright red); Lautoka: North of Lomolomo, dense forest, alt. 0–150 m., *Degener & Ordonez 13638* (A) (shrub 2 feet high, spreading; fruit pink); Serua: Vatuvilakia, vicinity of Ngaloa, alt. 150 m., *Degener 15142* (A). Without definite locality: *Seemann 158* (GH), *U. S. Expl. Exped.* (GH, isotype).

Possibly *Smith 236* (GH) from Kandavu also belongs here. In this specimen the fruit is separate from a young shoot, but the vegetative characters agree fairly well with those of the species.

**Syzygium vitiense** (Turrill) Merr. & Perry, comb. nov.

*Eugenia vitiensis* Turrill in Jour. Linn. Soc. Bot. **43**: 21. 1915.

We have seen no material that conforms to the characters of Turrill's species. The type was from Kandavu, on the way up Mt. Mbuke Levu.

**Syzygium Gillespiei** Merr. & Perry, sp. nov.

Probabiliter arbuscula vel frutex; ramulis novellis 4-angulatis vel compressis brunnescentibus; foliis coriaceis impellucidis opacis supra olivaceis minute punctatis subtus brunnescentibus lanceolatis vel ellipticis, 20–28 cm. longis, 4–10 cm. latis, basi cuneatis vel acutis apice acutiusculis (saepissime fractis), costa supra plana vel prominula subtus prominente, nervis primariis ± 13 patenti-adscendentibus in venam intramarginalem crenulatam 2–4 mm. a margine confluentibus, supra leviter insculptis subtus prominulis, reticulo inconspicuo; petiolo ± 3.5 cm. longo, supra subplano; inflorescentiis terminalibus ± 6 cm. longis latisque, pedunculo 2.5 cm. longo, ramis ramulisque divaricatis; floribus non visis; fructibus irregulariter obovoideis apice paullo constrictis calycis lobis coronatis, ± 2.5 cm. longis et 1.5 cm. diametro, umbilico 5–7 mm. diametro et alto, calycis lobis 4 circiter 3–4 mm. longis.

Viti Levu: Naitasiri: Tamavua woods, alt. 150 m., *Gillespie 2269* (A, type), Aug. 15, 1927, and *Gillespie 2463* (A).

We cannot suggest any apparently close relative of this species. The fruit approaches that of *Syzygium Richii* (A. Gray) Merr. & Perry, but the dried pericarp is thinner and more easily broken. The smaller leaves in outline are somewhat like those of *S. Jambos* (L.) Alston, but the petiole is more than twice as long.

**Syzygium malaccense** (L.) Merr. & Perry in Jour. Arnold Arb. **19**: 215. 1938.

*Eugenia malaccensis* L. Sp. Pl. 470. 1753.

Viti Levu: Ra: Vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15501* (A). Vanua Levu: Thakaundrove: Vatunivuamonde Mountain, Savu Savu Bay region, alt. 0–400 m., *Degener & Ordonez 14030* (A). Kandavu: Western end of island, near Cape Washington, open woods, 0–20 m., *Smith 305* (GH).

In looking over our Polynesian material we note that, in this region as well as in the Solomon Islands, this species grows wild. Furthermore, Guillaumin (in Jour. Arnold Arb. **12**: 255. 1931) cites some sylvan New Hebrides collections under "*Eugenia* (§ *Jambosa*) *Richii* . . . var. vel spec. distincta?" These collections, as we interpret the species, belong to *S. malaccense*.

## MELASTOMATACEAE

### Medinilla Gaud.

Six species of *Medinilla* have been described from Fiji, but a re-examination of the genus indicates that two (*M. amoena* Seem. and *M. parvifolia* Seem.) should be combined, while three more appear to be undescribed. In view of the inadequacy of earlier descriptions, all the species are here described and a key is proposed. Important specific characters are found in the color, shape, and size of the bracts (at nodes of inflorescence) and bracteoles (at or near apex of pedicels), the size of flowers, and to a certain extent in the shape and size of leaves, their bases, venation, etc.

Three of the Fijian species have been also recorded from Samoa, namely *M. amoena, M. heterophylla,* and *M. rhodochlaena.* It seems probable that *M. amoena* does not occur in Samoa and that the specimens so reported are referable to *M. samoensis* (Hochr.) Christoph. It is quite likely that the other two species do occur in Samoa; a specimen collected by Powell (GH) may represent *M. rhodochlaena.* The remaining Fijian species, on the basis of material now available, appear to be endemic. They are not closely related to species known from the New Hebrides.

#### Key to the Fijian species

Floral bracteoles large, 12–35 mm. long; flowers large, the petals 13–26 mm. long, 8–25 mm. broad, the anthers 6–8 mm. long, the style 13–22 mm. long; leaves isomorphic, the blades attenuate to acute at base; montane species, local in distribution, occurring above 700 m.

Young branchlets and inflorescence-parts brown-furfuraceous or farinose; pedicel articulate 5–8 mm. below calyx, the bracteoles elliptic, 12–20 mm. long, 5–10 (–18) mm. broad, stipitate at base, soon caducous; bracts and bracteoles brown when dried. 1. *M. longicymosa.*

Young branchlets and inflorescence-parts glabrous; pedicel articulate 2–4 mm. below calyx, the bracteoles ovate, 23–35 mm. long, 15–30 mm. broad, rounded or subcordate at base, sessile, closely enveloping the flower, persistent; inflorescence-branches, bracts, and bracteoles persistently bright red ..... 2. *M. Waterhousei.*

Floral bracteoles smaller, less than 12 mm. long; flowers smaller, the petals 6–13 mm. long, 5–11 mm. broad, or less, the anthers less than 5 mm. long, the style less than 13 mm. long; leaves often dimorphic.

Bracts and bracteoles similar or dissimilar, the bracteoles elliptic or obovate to reniform, 4–14 mm. broad, often clasping and concealing the calyx, persistent and conspicuous.

Blades of larger leaves subcordate or rounded at base, rarely obtuse; dimorphism of leaves usually pronounced; bracts (at least those of distal nodes) 4–14 mm. broad, essentially similar to the bracteoles.

Inflorescence amply paniculate, with long raceme-like branches, often on stems (if associated with leaves often compactly cymose, not conspicuously divaricate); bracts usually 3 or 4 at nodes, rarely only 2, obovate, longer than broad, white; bracteoles similar to bracts, paired; anthers trilobulate at base, the posterior lobe obvious ..... 3. *M. heterophylla.*

Inflorescence divaricate-cymose; bracts paired at nodes and reniform or suborbicular (at least on distal portions of inflorescence), usually broader than long, pink; bracteoles similar to bracts; anthers bilobulate at base, the posterior lobe lacking. 4. *M. Archboldiana.*

Blades of larger leaves rounded to attenuate at base; bracts (even those of distal nodes) less than 3 mm. broad, conspicuously smaller than the bracteoles.

Flowers large, the petals 12–13 mm. long, 10–11 mm. broad, the anthers 4–5 mm. long, the posterior basal lobe larger than the two anterior lobes, the style 12–13 mm. long; bracteoles longer than broad; leaf-blades conspicuously attenuate at base, the nerves oriented from base ..... 5. *M. kandavuensis.*

Flowers smaller, the petals 7–8 mm. long, 5–7 mm. broad, the anthers 2–2.5 mm. long, the posterior basal lobe smaller than the two anterior lobes, the style about 5 mm. long; bracteoles broader than long or suborbicular; bracts and bracteoles rich pink; leaf-blades rounded to acute at base, the nerves often joined for the basal 5–15 mm. .....6. *M. rhodochlaena.*

Bracts and bracteoles more or less similar, obovate- or elliptic-oblong or oblong-ligulate, small, 3 mm. broad or less, the bracteoles inconspicuous, not concealing the calyx.

Leaves often dimorphic, the larger blades 5–7-nerved, 7–15 cm. long, 4.5–10 cm. broad, subcordate to broadly obtuse at base, rarely subacute .....7. *M. Kambikambi.*

Leaves essentially isomorphic, the blades 3–5-nerved, 2.5–9 cm. long, 1.5–5.5 cm. broad, attenuate to acute at base, rarely obtuse .....8. *M. amocna.*

1. **Medinilla longicymosa** Gibbs in Jour. Linn. Soc. Bot. **39:** 147. *pl. 14.* 1909; Turrill in Jour. Linn. Soc. Bot. **43:** 22. 1915.

Compact epiphytic liana, the young parts brown-furfuraceous or farinose, the branchlets subterete, cinereous, the internodes 5–15 mm. long; leaves crowded, isomorphic, the petioles slender, shallowly canaliculate, 10–25 mm. long, the blades chartaceous or subcoriaceous, brown-farinose on both surfaces, soon glabrous, brownish when dried, elliptic, 3–7.5 cm. long, 1.5–4 cm. broad, attenuate to acute at base, obtuse to rounded and often slightly retuse at apex, 3(or 5-)-nerved from base, the nerves sometimes joined for 7 mm., impressed or nearly plane above, raised beneath, the veinlets immersed; inflorescence axillary, solitary, closely brown-furfuraceous on all young parts, slenderly racemose-cymose, (3–) 5–9 cm. long, few-flowered, short-pedunculate, the branches slender, the bracts, bracteoles, and pedicels pink to crimson; bracts usually paired at nodes, papyraceous, often foliaceous, obovate, 4–10 mm. long, 2–4 mm. broad, rounded at apex, tapering to a short stipe at base; flowers 3 or 4 at distal nodes, the pedicel 13–20 mm. long, articulate and bibracteolate 5–8 mm. below calyx, gradually swollen distally; bracteoles resembling bracts but larger, elliptic, 12–20 mm. long, 5–10 (–18) mm. broad, subacute to rounded at apex, acute to obtuse or rarely subcordate at base, stipitate, the stipe 2–4 mm. long; calyx-tube subcylindric, about 5 mm. long and in diameter, gradually narrowed and stipitate at base, the limb suberect, papyraceous or membranous, 2.5–3 mm. long, entire, the teeth 4, inconspicuous; petals 4, white, waxy, membranous, often inconspicuously glandular, obovate, 13–20 mm. long, 8–12 mm. broad, rounded or slightly retuse at apex, gradually narrowed at base; stamens 8, inflexed at anthesis, the filaments ligulate, 0.8–1.2 mm. broad, 7–9 mm. long, the anthers yellow, oblong, 6–7 mm. long, trilobulate at base (anterior lobes inconspicuous, the posterior lobe larger, subglobose, 1–1.5 mm. in diameter), subacute at apex, dehiscing by a single extrorse-terminal pore; style white, 13–20 mm. long, the stigma minute.

Viti Levu: *Parks 20917* (UC); Tholo North: Nandarivatu, *im Thurn 284* (NY); Mt. Victoria, alt. 1350 m., *Gillespie 4125* (Bish, NY); Mt. Loma Langa, alt. 1200 m., *Gillespie 3777* (Bish, NY, UC) (epiphyte; native name: *wa vutu*); Namosi: Naitarandamu Mt., alt. 1150–1300 m., *Gillespie 3158* (Bish, UC), *5102* (Bish, UC). Without definite locality: *Horne 1039* (GH).

Although I have not seen the type collection (*Gibbs 884*) of this species, there seems no doubt that the cited specimens are correctly placed. Turrill states that the plant is a tall tree, 40 ft. high, but this is surely due to an error in im Thurn's field notes; all indications point to the species as a liana, which eventually may appear to be a compact epiphyte.

2. **Medinilla Waterhousei** Seem. Fl. Vit. 89. 1865; Triana in Trans. Linn. Soc. **28:** 87. 1871; Cogn. in DC. Monogr. Phan. **7:** 590. 1891; A. C. Sm. in Bishop Mus. Bull. **141:** 111. 1936.

High-climbing liana, often epiphytic, glabrous throughout, the branches slender, rooting at nodes, the branchlets subterete or quadrangular, the internodes 15–25

mm. long; leaves isomorphic, the petioles slender, shallowly canaliculate, 5–20 mm. long, the mature blades papyraceous or chartaceous, elliptic, 4–8 cm. long, 2.5–4 cm. broad, attenuate to acute at base, obtuse at apex, 3- or 5-nerved from base, the nerves sometimes joined for 5 mm., nearly plane above, raised beneath, the veinlets usually immersed; juvenile leaf-blades ovate, up to 9 cm. long and 5.5 cm. broad, conspicuously acuminate at apex (acumen to 2 cm. long); inflorescence axillary or from defoliate branchlets, drooping, few-branched, narrowly racemose-cymose, 8–25 cm. long, the branches, bracts, bracteoles, and pedicels persistently bright red, the branches slender, soft, sometimes appearing winged when dried; bracts 2 or 3 at nodes, membranaceous or papyraceous, oblong, 9–27 mm. long, 4–10 mm. broad, rounded or obtuse at base and apex, sessile; flowers 1–3 at nodes, the pedicel slender, 15–25 mm. long, articulate 2–4 mm. below calyx; bracteoles resembling bracts but larger, ovate, 23–35 mm. long, 15–30 mm. broad, obtuse or rounded at apex, rounded or subcordate and strictly sessile at base; calyx white, subcarnose, the tube cupuliform, 6–7 mm. long and in diameter, obtuse and short-stipitate at base, the limb suberect, membranous, about 3 mm. long, entire, the teeth 4, obscure; petals 4, white, membranous, obovate, 23–26 mm. long, 20–25 mm. broad, rounded at apex, obtuse at base; stamens 8, the filaments white, ligulate, 1.2–1.5 mm. broad, 8–10 mm. long, the anthers rich purple, yellow at base, oblong-subulate, 7–8 mm. long, obscurely 3-lobulate at base, subacute at apex, dehiscing by a single introrse-terminal pore; style white, 20–22 mm. long, the stigma minute; fruit subglobose, 10–12 mm. in diameter, the calyx-limb subpersistent, the pericarp thin, the seeds numerous.

VANUA LEVU: Mbua: Navotuvotu, summit of Mt. Seatura, alt. 830 m., *Smith 1653* (Bish, NY) (in crest thickets; native name: *tekiteki vuina motheawa*). TAVEUNI: Above Somosomo, toward the lake, alt. 700–900 m., *Gillespie 4848.5* (Bish, UC) (on trunks of trees in dark mountain canyons), *Gillespie 4781* (Bish, NY, UC), *Smith 850* (Bish, GH, NY, UC, US) (in dense forest; native name: *tangimauthia*); summit of Uluingalau, alt. 1220 m., *Smith 899* (Bish, GH, NY, UC, US) (in dense forest; native name: *tangimauthia*).

The type of this striking species, *Seemann 175,* is also from Taveuni and was examined at Kew by the writer. Like *M. longicymosa,* the present species is very distinct and is apparently localized in a different series of mountains. The cited Gillespie specimens are sterile and apparently juvenile, but I have little doubt that they belong here, in spite of minor foliage differences. Notes on the color of the inflorescence parts, which are spectacularly brilliant, are incorporated in the above description.

3. **Medinilla heterophylla** A. Gray, Bot. U. S. Expl. Exped. **1:** 598. *pl. 75.* 1854; Seem. Fl. Vit. 88. 1865; Triana in Trans. Linn. Soc. **28:** 87. 1871; Cogn. in DC. Monogr. Phan. **7:** 598. 1891; Gibbs in Jour. Linn. Soc. Bot. **39:** 147. 1909.

High-climbing liana, the young parts inconspicuously brown-furfuraceous-puberulent, soon glabrescent, the branches subterete, stout, often rooting at nodes, the branchlets slender, terete; leaves conspicuously dimorphic (rarely those of a pair subsimilar); larger leaves: petioles slender, shallowly canaliculate, 12–30 mm. long, the blades chartaceous, ovate-oblong or elliptic, 6–16 cm. long, 4–10.5 cm. broad, subcordate or rounded at base, acute or short-acuminate at apex, 5- or 7-pli-nerved, the nerves often united to 12 mm. above base, slightly raised or nearly plane above, prominent beneath, the tertiaries prominulous on both surfaces or subimmersed; smaller leaves: petioles none or up to 2 mm. long, the blades suborbicular, up to 4 cm. in diameter, cordate and often subamplexicaul at base, inconspicuously 3- or 5-pli-nerved; inflorescence from main stems or terminal or axillary on branchlets, amply paniculate or cymose (when associated with leaves more compact and often only 5 cm. long), up to 50 cm. long, the branches often puberulent when young, soon glabrescent, few, raceme-like, with internodes 6–23 mm. long and swollen nodes; bracts white, (2 or) 3 or 4 in whorls at nodes,

persistent, papyraceous, obovate, 7–14 mm. long, 4–10 mm. broad, rounded at apex, obtuse at base; flowers 2–4 per node, abundant, the pedicel slender, 7–17 mm. long, with 2 apical bracteoles; bracteoles similar to bracts or suborbicular, clasping the calyx; calyx white, the tube cupuliform, 4–5 mm. long and in diameter at anthesis, obtuse or subacute at base, often minutely brownish-glandular-puberulent, the limb suberect, membranous, 1.5–2 mm. long, truncate at margin, the teeth 4, minute; petals 4, pale to rich pink, membranous, obovate, 9–10 mm. long, 8–9 mm. broad, rounded and sometimes emarginate at apex; stamens 8, the filaments slender, 4–5 mm. long at anthesis, the anthers usually yellow, oblong-subulate, about 3 mm. long, trilobulate at base (two anterior and one posterior lobes similar, rounded, about 0.5 mm. in diameter), subacute at apex, dehiscing by a single introrse-terminal pore; style 7–9 mm. long, the stigma minute; fruit globose-ovoid, purple to black, 6–8 mm. in diameter, the calyx-limb subpersistent, the pericarp thin, the seeds numerous, semi-obovoid, about 1 mm. long.

VITI LEVU: Tholo North: Nauwanga, near Nandarivatu, alt. 750 m., *Degener 14358* (A), *14528* (A); Mt. Matomba, near Nandarivatu, alt. 750 m., *Degener 14641* (A); Ra: Vicinity of Rewasa, alt. 50–200 m., *Degener 15372* (A) (native name: *wa nduanilulu;* stems used for tying house frames), *15524* (A); Tholo East: Matawailevu, Wainamo Creek, alt. 500 m., *St. John 18181* (A, Bish) (native name: *mimiolo*); Serua: Vicinity of Navua, *Seemann 176* (GH); Namosi: Vicinity of Namosi, alt. 400–800 m., *Gillespie 2648* (Bish, UC), *Parks 20266* (Bish, UC); near Namuamua, alt. 350 m., *Gillespie 3038* (Bish); Naitarandamu Mt., alt. 900 m., *Gillespie 3098* (Bish); Naitasiri: Mt. Kombalevu, alt. 350–400 m., *Parks 20310* (Bish, UC); Tholo-i-suva, alt. 250 m., *Parks 20077* (Bish, UC); Tamavua-Sawani road, alt. 200 m., *Setchell & Parks 15044* (UC), *15053* (UC). OVALAU: *U. S. Expl. Exped.* (GH, NY, US, TYPE); hills above Levuka, alt. 250–600 m., *Gillespie 4532* (Bish, NY, UC). KANDAVU: Mt. Mbuke Levu, alt. 200–500 m., *Smith 249* (Bish, GH, NY, UC, US). VANUA LEVU: Mbua: Upper Ndama River valley, alt. 100–300 m., *Smith 1582* (Bish, GH, NY, UC, US) (native name: *kambikambi*); Seatovo Range, alt. 100–350 m., *Smith 1561* (Bish, NY) (native name: *kambikambi*); Thakaundrove: Valanga Range, alt. 200–400 m., *Smith 383* (Bish, GH, NY, UC, US) (native name: *titoko ni kalou*); near Valethi, alt. 90 m., *Degener & Ordonez 13847* (A). TAVEUNI: Western slope, between Somosomo and Wairiki, alt. 700–900 m., *Smith 747* (Bish, GH, NY, UC, US). WITHOUT DEFINITE LOCALITY: *Horne 191* (GH).

The abundant color notes accompanying some of the cited specimens are incorporated in the description. *Medinilla heterophylla,* occurring most often in the forests of middle elevations, is the commonest Fijian species of the genus. Its ample inflorescences, white bracts, bracteoles, and calyces, and strongly dimorphic leaves amply distinguish it. In addition to the cited specimens, I refer several others to *M. heterophylla,* although they do not represent the typical form:

(1) A form with slightly smaller and less conspicuously dimorphic leaves, inflorescences apparently restricted to the apices of branchlets, and bracts conspicuously narrower than the bracteoles is represented by the following specimens from Nandarivatu, Tholo North, Viti Levu: *Degener & Ordonez 13574* (A), *Reay 11* (A), *Gillespie 3173* (Bish, NY).

(2) A form with both bracts and bracteoles much narrower than usual is represented by a specimen from Koro: eastern slope of main ridge, alt. 300–500 m., *Smith 1013* (Bish, GH, NY, UC, US) (native name: *kambikambi*). This form appears to be transitional toward *M. Kambikambi,* which, however, has colored bracts, etc.

Neither of these forms seems worthy of nomenclatural recognition, since the species appears to be comparatively unstable; in addition it may possibly hybridize with two of its relatives, namely *M. Archboldiana* and *M. Kambikambi,* both of which are here described as new. Although the two mentioned species are probably recent derivatives from *M. heterophylla,* they appear amply distinguished on the basis of characters mentioned in the key.

4. **Medinilla Archboldiana** sp. nov.

Frutex scandens ubique inflorescentiis juvenilibus interdum brunneo-puberulis exceptis glaber, ramulis subteretibus, internodiis 3–9 cm. longis; foliis plerumque disparibus interdum similibus; foliis majoribus: petiolis gracilibus leviter canaliculatis 9–32 mm. longis, laminis chartaceis ovato-oblongis vel ellipticis, (7–) 9–16 cm. longis, (3.5–) 4.5–8 cm. latis, basi rotundatis vel subcordatis, apice obtusis vel obtuse et breviter acuminatis, 5- vel 7-pli-nerviis, nervis saepe ad 15 mm. conjunctis supra leviter impressis vel prominulis subtus prominentibus, venulis immersis vel utrinque inconspicue prominulis; foliis minoribus: petiolis 1–3 mm. longis, laminis suborbicularibus ad 3 cm. diametro, basi rotundatis vel subcordatis, 5-nerviis; inflorescentiis axillaribus vel e ramulis defoliatis orientibus, divaricato-cymosis, 5–13 cm. longis et latis, ramulis gracilibus patentibus, internodiis 12–25 mm. longis; bracteis roseis oppositis membranaceis vel papyraceis, reniformibus vel late suborbicularibus, 10–12 mm. longis, 10–14 mm. latis, valde concavis, copiose nervatis, apice rotundatis, basi rotundatis et subamplexicaulibus (inferioribus interdum oblongis et 4 × 2 mm.); floribus 2 vel 3 e nodis superioribus, pedicellis gracilibus 12–17 mm. longis; bracteolis apicalibus bracteis similibus, 6–12 mm. longis, 7–14 mm. latis; calycis tubo cupuliformi circiter 3 mm. longo et 2.5 mm. diametro, basi obtuso vel rotundato et breviter stipitato, limbo erecto-patente membranaceo circiter 1.5 mm. longo margine integro, dentibus 4 obscuris; petalis 4 membranaceis roseis obovatis circiter 7 mm. longis et latis, apice rotundatis et saepe retusis; staminibus 8, filamentis ligulatis gracilibus 2.5–3 mm. longis, antheris oblongis circiter 1.8 mm. longis, basi introrse bilobulatis (lobis obtusis circiter 0.3 mm. longis, lobo posteriore nullo), apice subacutis, poro unico introrso-terminali dehiscentibus; stylo filiformi, stigmate minuto; fructibus subglobosis 6–7 mm. diametro, calycis limbo persistente, pericarpio tenui, seminibus numerosis semi-obovoideis circiter 1 mm. longis minute papillosis.

Viti Levu: Tholo North: Vicinity of Nandarivatu, Nandrau, alt. about 600 m., *Degener 14884* (A) (in forest; native name: *wa milolo*); Nauwanga, alt. 750 m., *Degener 14366* (A, TYPE), Feb. 13, 1941 (shrubby liana, in dense forest; petals pink); Sovutawambu, alt. 750 m., *Degener 14601* (A), *14655* (A); Nandarivatu, alt. 900 m., *Gillespie 3164* (Bish) (liana, the stem 5 cm. in diameter; flowers [bracts, etc.?] crimson); 4 miles down Vunindawa trail, alt. 800 m., *Gillespie 4278* (Bish) (flowers pink).

This apparently well localized species is distinguishable from *M. heterophylla* by the characters mentioned in the key; the color and shape of the bracts may not be too stable, and it is to be hoped that future collectors will note the constancy of color in this genus. Among the cited specimens, only the type bears flowers, and the anthers of these lack the basal posterior lobe; this character may prove to be quite dependable, as no flowers of *M. heterophylla* which I have dissected lack this lobe.

5. **Medinilla kandavuensis** sp. nov.

Frutex scandens ubique partibus juvenilibus minute et decidue brunneo-furfuraceis exceptis glaber, ramulis subteretibus cinereis, internodiis 1.5–4 cm. longis; foliis subsimilibus, petiolis gracilibus leviter canaliculatis 7–25 mm. longis, laminis chartaceis vel papyraceis obovato-ellipticis, (4–) 7–12 cm. longis, (2.5–) 4–7 cm. latis, basi conspicue attenuatis et in petiolum decurrentibus, apice obtusis vel obtuse cuspidatis, e basi 5-nerviis, nervis adscendentibus haud conjunctis supra prominulis (vel costa leviter insculpta) subtus valde elevatis, venulis immersis; inflorescentiis axillaribus vel e ramulis defoliatis orientibus solitariis vel binis racemoso-cymosis pauciramosis 5–7 cm. longis, ramulis gracilibus; bracteis papyraceis 2–4 e nodis obovatis vel spathulato-obovatis, 5–7 mm. longis, 1.5–3 mm. latis, apice rotundatis vel obtusis, basi obtusis vel subattenuatis; floribus 2 vel 3 e nodis superioribus, pedicellis gracilibus 5–8 mm. longis; bracteolis apice pedicellorum binis membranaceis ellipticis, 9–10 mm. longis, 5–6 mm. latis, longi-

tudinaliter nervatis, apice rotundatis vel obtusis, basi gradatim angustatis et obtusis; calycis tubo cupuliformi, 6–7 mm. longo, 5–6 mm. diametro, basi obtuso et breviter stipitato, limbo suberecto membranaceo circiter 2 mm. longo margine integro, dentibus 4 minutis; petalis 4 pallide roseis membranaceis obovatis, 12–13 mm. longis, 10–11 mm. latis, apice rotundatis vel retusis interdum minute mucronulatis; staminibus 8, filamentis albis membranaceis ligulatis 4–5 mm. longis, antheris oblongis 4–5 mm. longis, basi trilobulatis (lobis 2 interioribus circiter 0.5 mm. diametro, lobo posteriore paullo majore), apice gradatim angustatis et obtusis poro unico terminali dehiscentibus; stylo albo filiformi 12–13 mm. longo, stigmate minuto.

KANDAVU: Hills above Namalata and Ngaloa Bays, alt. 200–400 m., *Smith 201* (Bish, GH, TYPE, NY, UC, US), Oct. 18, 1933 (liana, in forest; petals pale pink; filaments and style white; anther-lobes yellow).

The new species shows points of similarity with both *M. rhodochlaena* and *M. amoena,* but it seems to be amply characterized by its large flowers, leaf-shape, proportions of bracts and bracteoles, etc. Unfortunately I neglected to note the color of the bracts, bracteoles, and calyx, but from the appearance of the dried specimens I judge that these parts were pale pink.

6. **Medinilla rhodochlaena** A. Gray, Bot. U. S. Expl. Exped. **1**: 600. 1854; Triana in Trans. Linn. Soc. **28**: 88. 1871; Cogn. in DC. Monogr. Phan. **7**: 602. 1891; Gibbs in Jour. Linn. Soc. Bot. **39**: 147. 1909; Turrill in Jour. Linn. Soc. Bot. **43**: 22. 1915.

Liana or subscandent shrub, the young parts brown-furfuraceous, often glabrescent, the branchlets slender, the internodes 1–5 cm. long; leaves dimorphic or isomorphic; larger leaves: petioles slender, shallowly canaliculate, often brown-puberulent, 8–20 mm. long, the blades chartaceous or subcoriaceous, often subpersistently brown-furfuraceous beneath, elliptic-oblong, 6–15 cm. long, (2–) 3.5–7 cm. broad, acute to rounded at base, obtusely acuminate at apex, (3- or) 5-pli-nerved, the inner nerves joined for 5–15 mm., impressed above, prominent beneath, the veinlets immersed or prominulous beneath; smaller leaves: petioles 1–4 mm. long, the blades oblong, to 4 cm. long and 2 cm. broad or smaller, rounded at base, obtuse at apex, 3–5-nerved; inflorescence axillary, solitary, cymose-racemose (often reduced to a single whorl of flowers on a short peduncle), 1–5 cm. long, the branches slender, brown-furfuraceous, often glabrescent; bracts (2 or) 3 or 4, whorled at nodes, rich pink, papyraceous, brown-furfuraceous, glabrescent, oblong, (1.5–) 2–5 mm. long, 1–3 mm. broad, obtuse at base and apex; flowers 3 or 4 per node, the pedicel slender, often furfuraceous, 2–8 mm. long; bracteoles paired, apical, clasping the calyx, rich pink, papyraceous or submembranous, orbicular or reniform, 4–10 mm. long, 5–11 mm. broad, rounded at base and apex, broad at base; calyx rich pink, the tube cupuliform, about 2 mm. long and 3.5 mm. in diameter, rounded at base, often puberulent, the limb suberect, membranous, about 1.5 mm. long, entire, the teeth 4, minute; petals 4, pink to pale purple, membranous, oblong-obovate, 7–8 mm. long, 5–7 mm. broad, rounded or subretuse at apex; stamens 8, the filaments slender, ligulate, about 3 mm. long, the anthers oblong, 2–2.5 mm. long, trilobulate at base (two anterior lobes about 0.5 mm. in diameter, the posterior lobe calcarate, slightly smaller), obtuse at apex, dehiscing by two often confluent terminal pores; style about 5 mm. long, the stigma minute; fruit subglobose, black at maturity, 6–7 mm. in diameter, the calyx-limb persistent, the pericarp thin, the seeds numerous, semi-obovoid, 1–1.2 mm. long, minutely papillose.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 900 m., *Gillespie 4277* (Bish); Rewa: Vicinity of Suva, *Meebold 8174* (Bish); Naitasiri: Suva Pumping Station, alt. 30 m., *Degener & Ordonez 13748* (A) (in forest); Tamavua woods, alt. 150 m., *Gillespie 2088* (Bish); Nasinu, alt. 150 m., *Gillespie 3600* (Bish, NY, UC); Central Road, alt. 230 m., *MacDaniels 1154* (Bish); Naikorokoro, *Meebold 21945* (Bish). OVALAU: *U.*

*S. Expl. Exped.* (GH, US, TYPE), *Seemann 177* (GH); upper ridge, alt. 250 m., *Bryan 598* (Bish). WITHOUT DEFINITE LOCALITY: *Horne 687* (GH).

*Medinilla rhodochlaena* is readily distinguished by its comparatively narrow and thick leaves, short and richly colored inflorescences, dissimilar bracts and bracteoles, etc. Seemann reports the native name *thavathava resinga*. Color notes accompanying the cited specimens are incorporated in the description.

7. **Medinilla Kambikambi** sp. nov.

Frutex scandens ubique glaber vel partibus novellis inconspicue brunneo-farinosis, ramulis teretibus cinereis, internodiis 2.5–5 cm. longis; foliis saepe disparibus interdum subsimilibus; foliis majoribus: petiolis plerumque gracilibus leviter canaliculatis 15–50 mm. longis, laminis chartaceis ovato-oblongis, 7–15 cm. longis, 4.5–10 cm. latis, basi subcordatis vel obtusis raro subacutis, apice obtuse cuspidatis vel obtusis, 5- vel 7-pli-nerviis, nervis ad 20 mm. interdum conjunctis supra prominulis vel subplanis subtus elevatis vel leviter prominulis, venulis immersis vel paullo prominulis; foliis minoribus: petiolis 2–3 mm. longis, laminis suborbicularibus ad 4.5 cm. diametro, basi et apice rotundatis, 5-pli-nerviis; inflorescentiis axillaribus et solitariis vel e ramulis defoliatis orientibus et saepe 2 vel 3 aggregatis, cymosis, 5–9 cm. longis, pedunculo ad 4 cm. longo, ramulis gracilibus interdum cum partibus juvenilibus minute brunneo-furfuraceis; bracteis 2–4 e nodis roseis membranaceis obovato-oblongis, 3–8 mm. longis, 1–3 mm. latis, apice obtusis, basi obtusis vel gradatim angustatis; floribus 2–4 e nodis, pedicellis gracilibus interdum ad 3 mm. infra calycem articulatis sub anthesi 4–7 mm. longis; bracteolis ut bracteis vel paullo minoribus; calyce roseo, tubo cupuliformi, 2–5 mm. longo, 3–5 mm. diametro, basi rotundato vel obtuso, interdum minute puberulo, limbo suberecto membranaceo 1–2 mm. longo integro, dentibus 4 minutis; petalis 4 roseis membranaceis late obovatis, 5–10 mm. longis et latis, apice rotundatis vel subretusis; staminibus 8, filamentis ligulatis 1.5–3 mm. longis, antheris luteis oblongis 1.5–3.5 mm. longis, basi trilobulatis (lobis subaequalibus circiter 0.5 mm. diametro), apice obtusis poro unico subterminali dehiscentibus; stylo filiformi 4–5 mm. longo, stigmate minuto.

VANUA LEVU: Mbua: Lower Wainunu River valley, alt. 0–200 m., *Smith 1747* (Bish, GH, NY, UC, US); Thakaundrove: Yanawai River region, Mt. Kasi, alt. 300–430 m., *Smith 1782* (Bish, NY); southern slope of Korotini Range, alt. 300—650 m., *Smith 503* (Bish, GH, NY, UC, US); Mt. Mariko, southern slope, alt. 300–600 m., *Smith 404* (Bish, GH, NY, UC, US); Natewa Peninsula, hills south of Natewa, alt. 400–600 m., *Smith 1959* (Bish, GH, NY, TYPE, UC, US), June 12, 1934.

The cited specimens were all collected in fairly dense foothill forest and the native name *kambikambi* was applied to all of them. While this is often used as a more or less generic term for the lowland species of *Medinilla* in Fiji, it is perhaps more strictly referred to the forms with colored bracts, at least on Vanua Levu. Color notes are incorporated in the description. While *M. Kambikambi* shows a similarity to *M. amoena* in its reduced bracts and bracteoles, foliage differences seem to differentiate it.

8. **Medinilla amoena** Seem. Fl. Vit. 88. 1865; Triana in Trans. Linn. Soc. **28**: 87. 1871; Cogn. in DC. Monogr. Phan. **7**: 590. 1891.

*Medinilla parvifolia* Seem. Fl. Vit. 89. 1865; Triana in Trans. Linn. Soc. **28**: 89, as *M. parviflora*. 1871; Cogn. in DC. Monogr. Phan. **7**: 603, as *M. parviflora*. 1891; Gillespie in Bishop Mus. Bull. **83**: *26. f. 33.* 1931.

Liana or shrub, probably subscandent, the stem often appressed to tree-trunks, the young parts brown-furfuraceous, glabrescent, the branchlets terete, the internodes 8–30 mm. long; leaves essentially isomorphic, the petioles slender, shallowly canaliculate, 5–25 mm. long, the blades chartaceous, glabrous (or sparsely

brown-furfuraceous when young), elliptic, 2.5–9 cm. long, 1.5–5.5 cm. broad, attenuate to acute at base (rarely obtuse), obtusely cuspidate at apex, 3- or 5-plinerved, the nerves often joined slightly above base, prominulous or plane above, prominent or sharply elevated beneath, the veinlets immersed; inflorescences axillary, usually solitary, racemose- or paniculate-cymose, 2–7 cm. long, the branches slender, brown-puberulent or stellate-furfuraceous, glabrescent, often reddish; bracts (2–) 4, whorled at nodes, submembranous or papyraceous, oblong-ligulate, usually 2–4 mm. long and 0.7–1.5 mm. broad (the lower ones sometimes to 10 mm. long and 3 mm. broad), obtuse at apex, obtuse or gradually narrowed to a short stipe at base; flowers 2 or 3 per node, the pedicel slender, puberulent or furfuraceous, glabrescent, often reddish, 2.5–5 (–15 in fruit) mm. long; bracteoles paired (pedicellary articulation sometimes to 2 mm. below calyx), similar to bracts, elliptic-oblong or oblong-obovate, at length caducous; calyx-tube cupuliform, 2.5–4 mm. long and in diameter at anthesis, obtuse at base and sometimes abruptly narrowed to a short stipe, often puberulent, the limb suberect, membranous, 1–1.5 mm. long, entire, the teeth 4, minute; petals 4, pink to purple, membranous, obovate-oblong to obovate-spatulate, (3–) 6–7.5 mm. long and broad, obtuse or rounded at apex; stamens 8, the filaments slender, ligulate, 1.5–3.5 mm. long, the anthers yellow, oblong-subulate, 1.5–2 mm. long, trilobulate at base (two anterior lobes about 0.5 mm. in diameter, the posterior lobe slightly larger), obtuse at apex, dehiscing by a single terminal pore; style filiform, to 6 mm. long, the stigma minute; fruit subglobose, black at maturity, 6–7 mm. in diameter, the calyx-limb persistent, the pericarp thin, the seeds numerous, semiobovoid, 1–1.2 mm. long, minutely papillose.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 800–900 m., *Degener & Ordonez 13571* (A), *Gillespie 4183* (Bish), *4234* (Bish, NY); Nandrau, near Nandarivatu, alt. about 600 m., *Degener 14883* (A) (native name: *levandomondomo*); Mt. Matomba, near Nandarivatu, alt. 790 m., *Degener 14461* (A) (native name: *mathou*); Namosi: Vicinity of Namosi, alt. about 450 m., *Gillespie 2875* (Bish, UC) (native name: *mimiloro*), *Seemann 182* (GH, TYPE COLL.); slopes of Mt. Voma, alt. 550 m., *Gillespie 2895* (Bish, NY, UC); Serua: Ngaloa, alt. near sea-level, *Degener & Ordonez 13616* (A). OVALAU: Hills above Levuka, alt. 300–350 m., *Gillespie 4486* (Bish), *4551* (Bish, NY, UC). VANUA LEVU: Mbua: Navotuvotu, summit of Mt. Seatura, alt. 830 m., *Smith 1666* (Bish, GH, NY, UC, US), *1671* (Bish, NY, US); Thakaundrove: Uluinabathi Mt., Savu Savu Bay region, alt. 150 m., *Degener & Ordonez 13939* (A).

The cited specimens were collected in forest or in upland thickets; the color of bracts and bracteoles has not been noted but apparently they are pale pink. While I have not directly compared the type of *M. parvifolia* with most of the above-cited specimens, I examined it at Kew in 1935 and concluded that it was identical with *Smith 1666,* a specimen with unusually small leaves and with bracts and bracteoles larger than average. This plant was growing in an exposed position in crest-thickets, and it may be assumed that *Seemann 178,* the type of *M. parvifolia,* collected on the summit of Mt. Voma in Namosi Province, was taken from a similarly exposed plant. In view of the gradations present in the specimens now available, I do not believe that Seemann's two species can be maintained. The four Gillespie specimens, upon which his redescription of *M. parvifolia* was based, are precisely similar to the type collection of *M. amoena.*

### CLIDEMIA D. Don

*Clidemia* has apparently not been previously reported from the Pacific in strictly botanical literature, a rather surprising fact, since one species has become the most pernicious weed in Fiji and is to be looked for in other groups.

**Clidemia hirta** (L.) D. Don in Mem. Wern. Soc. **4:** 309. 1823; in DC. Prodr. **3:** 157. 1828; Cogn. in DC. Monogr. Phan. **7:** 986. 1891.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 750 m., *Degener 14266* (A) (naturalized shrub to 2 m. high, in open forest; petals white); Rewa: Suva Bay, near sea-level, *Bryan 187* (A, Bish) (low shrub along roadsides; petals white; fruit purple; local name: *Koster's curse*); Naitasiri: Tamavua, *Gillespie 2015* (Bish, NY). KANDAVU: Hills above Namalata and Ngaloa Bays, alt. 200–400 m., *Smith 119* (Bish, GH, NY) (low shrub, to 1 m. high, on edge of forest; petals white to pink). VANUA LEVU: Mbua: Southern portion of Seatovo Range, alt. 100–350 m., *Smith 1703* (Bish, NY) (shrub 1–3 m. high, forming dense thickets in dry forest; petals white; fruit deep purple; a common pernicious weed; native name: *kaurasinga*).

This extremely abundant shrub often forms impenetrable masses in dryish forest, spreading with great rapidity in areas which are subject to the depredations of wild cattle. Its control, and if possible its eradication, are major problems for agriculturists in Fiji. Discussions of the species in Fiji have appeared in agricultural journals, the record being given here merely to introduce the name into the more specialized literature.

### ASTRONIDIUM A. Gray

In proposing the genus *Astronidium* for a single Fijian species, Gray (in Proc. Am. Acad. **3:** 53. 1853; Bot. U. S. Expl. Exped. **1:** 581. 1854) differentiated it from *Astronia* Bl. on the basis of its tetramerous flowers, calcarate anthers, and minute stigma. The genus was maintained by Seemann, who added a second species, but the monographers of the family, Triana and Cogniaux, submerged it in *Astronia*. Markgraf (in Notizbl. Bot. Gart. Berlin **12:** 47–50. 1934) pointed out that the genus should be maintained, on the basis of much stronger characters than those mentioned by Gray, and enlarged to include all the Polynesian species, some of the Papuasian ones, and one species from Borneo. Some recent students including Christophersen (in Bishop Mus. Bull. **154:** 31–34. 1938) have accepted this separation, and on re-examination of the group the present writer finds that the two genera are sharply distinct.

The species of *Astronia,* as first pointed out by Merrill (in Philip. Jour. Sci. Bot. **8:** 337. 1913), are polygamo-dioecious (very frequently if not always), while *Astronidium* always has perfect flowers. The calyx-lobes of *Astronia* are isomerous and apparent in the bud, while the calyces of *Astronidium* remain closed much later and then usually rupture irregularly. Staminal differences between the two genera are pronounced. A difference which I have not seen elsewhere emphasized and which is very constant is to be found in the ovulation. The ovary-cells of *Astronia* are *2* (in all the specimens which I have examined, although 4 are mentioned in some descriptions) and the placentas are flat or pulvinate, with erect seeds. In *Astronidium* the ovary-cells are 4 to several (rarely *2* or 3), and the placentas are erect and clavate, with radiating seeds. The placental character is especially obvious in fruits after the wall has split and the seeds fallen. Differences between the two genera are thus expressed in a key:

Plants polygamo-dioecious, some with perfect and others with staminate flowers; calyx-lobes apparent in bud, marked by radiating lines on the summit, the limb usually isomerously dentate; anthers about as broad as long, the connective conspicuously enlarged dorsally, the locules short, the basal spur none; ovary *2*(–4?)-celled, the placentas inconspicuous, flattened or pulvinate, the seeds erect ..... *Astronia Bl.*

Plants always with perfect flowers; calyx-bud closed, without indication of lobes, at length irregularly (or usually so) rupturing; anthers much longer than broad, the connective not dorsally enlarged, the locules elongate, occupying the entire long inner face of the

connective, the basal spur straight, slender, rarely lacking (always present in Fijian species); ovary 4–several-celled (rarely 2- or 3-celled), the placentas conspicuous, erect, clavate, the seeds divergent .....*Astronidium* A. Gray.

Many Pacific species originally described in *Astronia* have already been transferred to *Astronidium*. However, the following combinations, based on the only two species of the group thus far described from the New Hebrides, are necessary: **Astronidium aneityense** (Guillaumin) comb. nov. (*Astronia aneityensis* Guillaumin in Jour. Arnold Arb. **12**: 261. 1931); **Astronidium banksianum** (Guillaumin) comb. nov. (*Astronia banksiana* Guillaumin in Jour. Arnold Arb. **12**: 261. 1931). Neither of these species has very close relatives among the Fijian species of *Astronidium*.

I am able to distinguish 12 species of the genus in Fiji. *Astronia fraterna* A. Gray was reported from Fiji by Seemann (Fl. Vit. 85. 1865) on the basis of a sterile branch collected by Milne on Viti Levu. One may be sure that this is a misidentification. The type of *Astronia fraterna*, from the Societies, is most similar, among Fijian species, to *Astronidium parviflorum*, but it has 5-merous flowers, a larger calyx-limb, a more compact inflorescence, and smaller leaves.

Two Fijian species have been reported from Samoa, one of them being *Astronidium parviflorum*, Samoan records of which I have not personally verified. *Astronia confertiflora* was reported from Samoa by Reinecke, but Christophersen (in Bishop Mus. Bull. **154**: 34. 1938) expresses doubt of the determination. As to the only other species believed to occur in both Samoa and Fiji, *Astronidium Pickeringii* A. Gray (with two varieties), I have concluded that Gray's concept includes two species; these are discussed below under *Astronidium victoriae*.

### Key to the Fijian species

Leaf-blades glabrous beneath (sometimes brown-furfuraceous on nerves and sparsely so on surface, but not persistently so).

Flowers comparatively small, the calyx 2–6 mm. long and in diameter at anthesis, the lobes inconspicuous, less than 1 mm. long, the petals 4–6, less than 7 mm. long and 4 mm. broad, the anthers 2–5 mm. long; mature fruit 3–8 mm. in diameter.

Pedicels less than 1 mm. long, the flowers and fruits essentially sessile; tomentum or puberulence of inflorescence-branches and calyx often persistent in fruiting specimens .....1. *A. confertiflorum.*

Pedicels at least 1.5 mm. long, obvious.

Calyx splitting into 4–6 lobes (these rarely to 8 in fruiting calyces).

Leaf-blades more than twice as long as broad; petals 4, small, 2.5–3 mm. long; calyx at anthesis 2–3 mm. long; anthers 2–2.5 mm. long .....2. *A. parviflorum.*

Leaf-blades less than twice as long as broad; petals 5 or 6, larger, 5–7 mm. long; calyx at anthesis 4–4.5 mm. long; anthers 3.5–4.5 mm. long ..3. *A. floribundum.*

Calyx splitting into 8–11 lobes or more or essentially truncate.

Leaf-blades elliptic or oblong or ovate, the outer collecting nerves usually more than 1 mm. from margin; calyx about as broad as long, minutely furfuraceous-lepidote when young, often persistently so, the limb erect and with small but obvious lobes; anthers 3.5 mm. long or less .....4. *A. victoriae.*

Leaf-blades elliptic to obovate, the outer collecting nerves less than 1 mm. from margin; calyx broader than long, glabrous, the limb incurved and essentially truncate at apex; anthers 4–5 mm. long .....5. *A. inflatum.*

Flowers comparatively large, the calyx 7–12 mm. long and in diameter at anthesis, the lobes large, 1–5 mm. long, the petals 6–10, large, 7–12 mm. long, 3–7 mm. broad, the anthers 5–9 mm. long; mature fruit 10–15 mm. in diameter.

Leaf-blades large, 11–27 cm. long, 5–17 cm. broad, 5-nerved, the 4th and 5th nerves 2–7 mm. within margin, paralleled by a fainter collecting-nerve.

Leaves petiolate, the 3 principal nerves joined less than 2.5 cm. above base, the petioles 1.2–6 cm. long .....6. *A. robustum.*

Leaves sessile, the 3 principal nerves joined 3–4 cm. above base .....7. *A. sessile.*
Leaf-blades smaller, 7–14 cm. long, 3–6.5 cm. broad, 3-nerved, the 4th and 5th nerves inconspicuous, 1 mm. or less from margin.
Inflorescence compact, few-flowered, not more than 9 cm. broad even in fruit; pedicels 3–8 mm. long; petals about 12 mm. long and 7 mm. broad; anthers about 7 mm. long .....8. *A. macranthum.*
Inflorescence ample, many-flowered, 9–17 cm. broad; pedicels 1 mm. long or less; petals 7–8 mm. long, 3–4 mm. broad; anthers 5–5.5 mm. long .....9. *A. Degeneri.*
Leaf-blades densely and persistently brown-pubescent beneath.
Leaves small, the blades 5–9 cm. long, 2–4.5 cm. broad, the lower surfaces, inflorescence-branches, calyces, etc., completely obscured by a layer of minute ciliolate or substellate scales less than 0.1 mm. in diameter .....10. *A. tomentosum.*
Leaves larger, the blades 10–22 cm. long, 4–12 cm. broad, the lower surfaces, inflorescence-branches, calyces, etc., less closely pubescent than the preceding, the hairs simple, spreading.
Inflorescences, leaf-blades beneath, etc., subhispid with subulate hairs 1–2.5 mm. long. 11. *A. Storckii.*
Inflorescences, leaf-blades beneath, etc., tomentellous or puberulent with often clavate hairs 0.2–0.5 mm. long .....12. *A. kasiense.*

1. **Astronidium confertiflorum** (A. Gray) Markgraf in Notizbl. Bot. Gart. Berlin **12**: 49. 1934.

*Astronia confertiflora* A. Gray, Bot. U. S. Expl. Exped. **1**: 579. 1854; Seem. Fl. Vit. 86. 1865; Triana in Trans. Linn. Soc. **28**: 152, as *A. consertiflora.* 1871; Cogn. in DC. Monogr. Phan. **7**: 1097. 1891.

Tree or shrub to 10 m. high, the young parts usually densely brown-furfuraceous-puberulent, at length glabrescent, the branchlets subterete or distally quadrangular; petioles slender, canaliculate, 2–5 (–7) cm. long; leaf-blades papyraceous to subcoriaceous, elliptic, 9–18 cm. long, 3–10 cm. broad, obtuse to obscurely subcordate at base, gradually narrowed to an acute or cuspidate apex, slightly recurved at margin, the principal nerves 3 or 5, sometimes united for 1 cm., impressed or nearly plane above, prominent and often conspicuously puberulent beneath, the marginal collecting nerves inconspicuous, the cross-veins faintly impressed or plane above and prominulous beneath; inflorescence terminal, trichotomously cymose, many-flowered, often persistently furfuraceous-puberulent, 5–9 cm. long, 8–15 cm. broad, the branchlets often flattened, the bracts subfoliaceous, about 7 by 3 mm. or larger, caducous, the bracteoles similar or linear, 4–5 mm. long, acute; flowers crowded at ends of ultimate branchlets, the pedicels 1 mm. long or less; calyx coriaceous, obscurely furfuraceous-peltate with minute scales, glabrescent, cupuliform, about 4 mm. long and 3.5 mm. in diameter, the limb erect and about 1.5 mm. long at anthesis, irregularly splitting into 8–10 oblong obtuse lobes 0.7–1 mm. long and 0.7–1.5 mm. broad; petals 4 or 5, oblong, about 3.5 mm. long, 2–2.5 mm. broad, rounded at apex; stamens 8 or 10, the filaments carnose, ligulate, about 2.5 mm. long, the anthers oblong, about 2.5 mm. long, recurved at apex, the basal spur acute, about 0.7 mm. long; style carnose, about as long as petals; locules 4 or 5; fruit depressed-globose, 3.5–6 mm. in diameter, often puberulent, the calyx-limb with 8–16 lobes, the mature placentas usually 5, rarely 4, clavate, 1–2 mm. long, retuse or truncate at apex, the seeds obovoid, 0.7–1 mm. long.

VITI LEVU: Rewa: Near Suva, alt. about 200 m., *Bryan 365* (Bish) (tree 4–5 m. high, in rain-forest near stream, the bark gray-brown, nearly smooth); Naitasiri: Central Road, alt. 230 m., *MacDaniels 1139* (Bish) (tree 10 m. high, in rain-forest); Mt. Korombamba, alt. 500–600 m., *Gillespie 2348* (Bish, UC) (woods near summit), *Gillespie 2389* (Bish, UC) (summit), *Parks 20338* (Bish, UC) (tree 4 m. high, on cliff near summit). VANUA LEVU: Mbua: Mbua Bay region, *U. S. Expl. Exped.* (GH, US, TYPE); upper Ndama River valley, alt. 100–300 m., *Smith 1600* (Bish, GH, NY, UC, US) (shrub 4 m. high, in dense forest; native name: *ndava*). TAVEUNI: Mountain slopes above Somosomo, alt. 650 m., *Gillespie 4833* (Bish, NY, UC) (common small tree).

The first five species of my key are closely related and not always easy to distinguish, but *A. confertiflorum* is quite distinct on the basis of its subsessile flowers and fruits. Presence of tomentum on the inflorescence-branches or its persistence is not an entirely dependable character in this group of species, but in *A. confertiflorum* it seems more persistent than in its relatives.

2. **Astronidium parviflorum** A. Gray in Proc. Am. Acad. **3:** 53. 1853; Bot. U. S. Expl. Exped. **1:** 582. *pl. 72C.* 1854; Seem. Fl. Vit. 87. 1865; Markgraf in Notizbl. Bot. Gart. Berlin **12:** 49. 1934.

*Astronia parviflora* Triana in Trans. Linn. Soc. **28:** 152. 1871; Cogn. in DC. Monogr. Phan. **7:** 1099. 1891.

Small tree, up to 7 m. high, the young parts glabrous or occasionally brown-furfuraceous-puberulent and soon glabrescent, the branchlets subterete or distally quadrangular; petioles slender, 13–40 mm. long; leaf-blades chartaceous, elliptic, 6–18 cm. long, 2.5–8 cm. broad, obtuse to subattenuate at base, obtuse or acute at apex, slightly recurved at margin, the principal nerves 3, sometimes united for 1 cm., lightly impressed above and subprominent beneath, the marginal collecting-nerve inconspicuous, prominulous beneath, the cross-veins plane above and prominulous beneath; inflorescence terminal, trichotomously cymose, usually glabrous, 6–12 cm. long, 7–15 cm. broad, the branchlets somewhat flattened, the bracts elliptic, short-stipitate, 7–9 mm. long, soon deciduous, the bracteoles caducous; flowers usually in threes at apices of ultimate branchlets, the pedicels slender, 1.5–4 mm. long; calyx lepidote with scattered minute reddish peltate scales, glabrescent, cupuliform, 2–3 mm. long and in diameter, the limb erect, 0.7–1.5 mm. long, splitting into 4 or 5 (rarely 8) lobes, the lobes broadly ovate, 0.3–1 mm. long, 1–2 mm. broad, obtuse or apiculate at apex; petals 4, submembranous, oblong, 2.5–3 mm. long, 1.5–2 mm. broad, obtuse or subacute at apex; stamens 8 (rarely 6), the filaments thin-carnose, ligulate, 1.5–2.5 mm. long, the anthers oblong, 2–2.5 mm. long, recurved or obtuse at apex, the basal spur acute, 0.5–1 mm. long; style 2–3.5 mm. long, the locules usually 4 (rarely 2 or 3); fruit depressed-subglobose, 3–5 mm. in diameter, the mature placentas usually 4 (rarely 2 or 3), clavate, 1–1.5 mm. long, flattened or slightly retuse at apex, the seeds obovoid or dolabriform, 0.8–1.2 mm. long.

VITI LEVU: N a m o s i: Voma Mt., *Seemann 173* (GH); Vakarongasiu Mt., alt. 900 m., *Gillespie 3257* (Bish); Naitarandamu Mt., alt. 1100–1250 m., *Gillespie 3240* (Bish, NY, UC), *3347* (Bish, NY, UC), *3373* (Bish, UC). OVALAU (or MBAU?): *U. S. Expl. Exped.* (GH, NY, US, TYPE). VANUA LEVU: T h a k a u n d r o v e: Mt. Uluingala, Natewa Peninsula, alt. 600–820 m., *Smith 1987* (Bish, GH, NY, UC, US) (shrub 4 m. high, in dense forest). TAVEUNI: Western slope, between Wairiki and Somosomo, alt. 400 m., *Smith 725* (Bish, GH, NY, UC, US) (shrub 5 m. high, in forest; petals, stamens, and style white; native name: *mothe lutu*). WITHOUT DEFINITE LOCALITY: *Horne 1038* (GH).

*Astronidium parviflorum,* the genotype, is readily enough distinguished by its small 4-merous flowers; this and the next are the only species of the genus in which I have noted fewer than 4 ovary-cells. When flowers are lacking, *A. parviflorum* is difficult to distinguish from its allies. However, it may be distinguished from *A. floribundum* by its leaf-shape and from *A. victoriae* by the fewer lobes of its usually smaller calyx in fruit.

3. **Astronidium floribundum** (Gillespie) comb. nov.

*Astronia floribunda* Gillespie in Bishop Mus. Bull. **83:** 24. *f. 30.* 1931.

VITI LEVU: N a i t a s i r i: Southeastern slopes of Korombamba Mt., alt. 400 m., *Gillespie 2246* (Bish, TYPE, GH, UC).

The original description, based on the only known collection of the species, is adequate. The relationship of *A. floribundum* to *A. parviflorum* is indicated by the lepidote calyx with comparatively few lobes. The two species are amply

distinguished by floral and foliage characters. Gillespie reports the type-locality as being in the province of Rewa, but Korombamba Mt. is on the boundary of that province and Naitasiri, and the southeastern slopes presumably lie in Naitasiri. I note that the petals are often 6 and somewhat larger than the original description implies, being up to 7 by 4 mm.; the stamens are 10 or 12, the anthers up to 4.5 mm. long; the ovary-cells appear to be usually 3 as noted by Gillespie but some variation is to be anticipated in this character.

4. **Astronidium victoriae** (Gillespie) comb. nov.

*Astronia Pickeringii* A. Gray, Bot. U. S. Expl. Exped. **1**: 577, in part. 1854; Triana in Trans. Linn. Soc. **28**: 152. 1871.

*Astronia Pickeringii* var. *vitiensis* A. Gray, Bot. U. S. Expl. Exped. **1**: 578. *pl. 72B* (excl. *f. 1–8*). 1854; Seem. Fl. Vit. 86. 1865; Cogn. in DC. Monogr. Phan. **7**: 1095. 1891.

*Astronia victoriae* Gillespie in Bishop Mus. Bull. **83**: 25. *f. 32*. 1931.

Tree or shrub 3–7 m. high, the young parts brown-furfuraceous-puberulent, glabrescent, the branchlets subterete or distally quadrangular; petioles slender, canaliculate, 1–4.5 (–6.5) cm. long; leaf-blades thin-coriaceous or chartaceous, elliptic or oblong or ovate, 6–14 (–17) cm. long, 2–7.5 (–10) cm. broad, rounded or obtuse at base, obtuse at apex, slightly recurved at margin, the principal nerves 3, from base or joined up to 5 mm., impressed above, prominent beneath, the marginal collecting-nerves 2 (sometimes faintly 4), the cross-veins slightly impressed or plane above, prominulous beneath; inflorescence terminal, trichotomously cymose, sometimes puberulent and soon glabrescent, 5–15 cm. long, 8–17 cm. broad, the branchlets slightly flattened, the bracts foliaceous, about 15 by 3 mm. or larger, the bracteoles linear, about 5 mm. long, soon deciduous; flowers usually in threes, the pedicels 2–5 mm. long; calyx coriaceous, minutely ferruginous-furfuraceous-lepidote, glabrescent, cupuliform, 4–6 mm. long and in diameter, the limb erect, about 2 mm. long, irregularly splitting into 8–11 lobes, the lobes subdeltoid, 0.3–1 mm. long, 0.5–2 mm. broad, obtuse at apex; petals 5 or 6, submembranous to thin-carnose, oblong or broadly obovate, at anthesis 4–5 mm. long and 3–3.5 mm. broad, rounded at apex; stamens 10 or 12, the filaments carnose, ligulate, at anthesis 3–4 mm. long, the anthers oblong, 3–3.5 mm. long, obtuse or conspicuously recurved at apex, the basal spur acute, 0.5–1 mm. long; style carnose, about as long as petals, the locules 5 or 6 (rarely 7); fruit depressed-subglobose, usually glabrescent, 4–8 mm. in diameter, the calyx-lobes sometimes up to 20, the mature placentas 5 or 6 (rarely 7), clavate, 2–3 mm. long, retuse at apex, the seeds oblong-clavate, 0.8–1.5 mm. long.

Viti Levu: Tholo North: Mt. Victoria, near summit, alt. 1200 m., *Gillespie 4101* (Bish, type, GH, UC); Loma Langa Mt., near summit, alt. 1200 m., *Gillespie 3936* (UC); vicinity of Nandarivatu, alt. 750–830 m., *Degener 14798* (A) (tree 3 m. high, in open forest), *Greenwood 849* (A) (tree about 6 m. high; flowers white); vicinity of Nasukamai, alt. 480 m., *Gillespie 4396.1* (Bish, UC) (native name: *tava*); Tholo East: South of Matawailevu, alt. about 500 m., *St. John 18230* (A, Bish) (tree 10 m. high, on steep bank overhanging river; native name: *ndiriniu*); Namosi: Southeast of Namosi, alt. 500 m., *Gillespie 2870* (Bish); Voma Mt., alt. 500 m., *Gillespie 2495* (Bish, GH, UC) (native name: *tava*); Naitasiri: Upper Waindina River, alt. 50 m., *MacDaniels 1025* (Bish) (tree 10 m. high; native name: *tavo*). Ovalau: Alt. 300 m., *U. S. Expl. Exped.* (GH, US, type of *Astronia Pickeringii* var. *vitiensis*). Vanua Levu: Mbua: Upper Ndama River valley, alt. 100–300 m., *Smith 1586* (Bish, GH, NY, UC, US) (tree 5 m. high; native name: *wai susu*). Taveuni: Vicinity of Waiyevo, alt. 600 m., *Gillespie 4726* (Bish, NY, UC) (in woods); mountain ridges above Somosomo, alt. 800 m., *Gillespie 4777* (Bish) (common small tree). Moala: *Bryan 314* (Bish) (tree 5–6 m. high, in rain-forest on ridge-slopes, alt. about 200 m.); Ndelaimoala, alt. 400 m., *Smith 1363* (Bish, GH, NY, UC, US) (shrub 3 m. high, at edge of forest).

Gray based his *Astronia Pickeringii* upon two varieties, *samoensis* and *vitiensis*. In examining type material and a series of specimens referable to the variety *vitiensis*, I have come to the conclusion that the differences are of a specific nature. The only Samoan material of this complex available to me is the type collection, which bears immature flowers. Therefore a discussion of flowering and fruiting differences, if any exist, cannot be given at present. A very obvious foliage difference, concerning the crystal-bearing cells, serves to separate the two forms readily, as follows:

Upper surface of leaf-blades smooth, with numerous conspicuous crystal-bearing cells 0.2–0.3 mm. long lying just beneath the epidermis; leaf-blades acute to subattenuate at base, brownish green when dried .....*Astronidium Pickeringii* (A. Gray) Christoph. (*Astronia Pickeringii* var. *samoensis* A. Gray).

Upper surface of leaf-blades papillose, the crystal-bearing cells obscure, scarcely visible under magnification; leaf-blades obtuse or rounded at base, often yellowish green when dried .....*Astronidium victoriae* (*Astronia Pickeringii* var. *vitiensis* A. Gray).

It seems desirable to designate the variety *samoensis* as the actual type of *Astronia Pickeringii*, since Gray clearly specifies that the floral characters of his description refer to the Samoan plant; also, the correct combination of this specific name with *Astronidium* was first made by Christophersen (in Bishop Mus. Bull. **154**: 32. 1938) in connection with the variety *samoense* (A. Gray) Christoph. This varietal combination of Christophersen now seems unnecessary, if my view that the Fijian variety is specifically distinct is accepted.

No consequential differences are to be found between the types of *Astronia victoriae* and *Astronia Pickeringii* var. *vitiensis*, those pointed out by Gillespie being hardly important. Even on the type of *A. victoriae* the calyx-lobes are often 8–11 rather than regularly 8. Inflorescence-pubescence is an inconstant character and is found in varying phases of persistence on the above-cited specimens.

5. **Astronidium inflatum** (A. C. Sm.) comb. nov.

*Astronia inflata* A. C. Sm. in Bishop Mus. Bull. **141**: 114. *f. 60*. 1936.

VANUA LEVU: *Horne 616* (GH); Mbua: Navotuvotu, summit of Mt. Seatura, alt. 700–830 m., *Smith 1645* (Bish, GH, NY, UC, US) (slender tree 4 m. high, in dense forest; calyx pink); Thakaundrove: Mt. Mbatini, summit, alt. 1030 m., *Smith 707* (Bish, GH, NY, UC, US) (shrub 2 m. high, in dense thickets); Mt. Ndikeva, eastern buttress, alt. 800 m., *Smith 1875* (Bish, TYPE, GH, NY, UC, US) (tree 4 m. high, in crest thickets).

Since no material of the species has been obtained since the original description, this is not repeated. Although closely related to the more common *A. victoriae*, the present species may be readily distinguished on the basis of characters mentioned in the key.

6. **Astronidium robustum** (Seem.) comb. nov.

*Astronia robusta* Seem. Fl. Vit. 86. 1865; Triana in Trans. Linn. Soc. **28**: 152. 1871; Cogn. in DC. Monogr. Phan. **7**: 1096. 1891; Gillespie in Bishop Mus. Bull. **83**: 25. *f. 31*. 1931.

Tree to 20 m. high, the young parts glabrous or faintly puberulent and soon glabrescent, the branchlets stout, distally quadrangular, otherwise terete; petioles stout, shallowly canaliculate, 1.2–6 cm. long; leaf-blades chartaceous to subcoriaceous, elliptic, 11–27 cm. long, 5–17 cm. broad, subacute to attenuate at base, subacute or obtuse or obtusely cuspidate at apex, slightly recurved at margin, the principal nerves 5, arising from base or united up to 2.5 cm., impressed or plane above, prominent beneath, the marginal collecting-nerves faint, the cross-veins prominulous to faintly impressed above, sharply raised or prominulous beneath; inflorescence terminal, trichotomously cymose, often faintly puberulent, soon gla-

brescent, 5–10 cm. long and broad, the branchlets slightly flattened or quadrangular, the bracts papyraceous, obovate, about 15 by 8 mm. or larger, soon deciduous, the bracteoles 7 mm. long or more, caducous; flowers usually in threes, the pedicels 3–4 mm. long; calyx coriaceous, glabrous, often slightly verrucose or rugulose, cupuliform, 9–12 mm. long and in diameter at anthesis, the limb erect, about 5 mm. long at anthesis, irregularly splitting into 4–7 lobes, the lobes deltoid to broadly ovate, 2–5 mm. long, 3–8 mm. broad, acute or obtuse at apex; petals 6–9, usually 8, subcarnose, oblong, 10–12 mm. long, 4–6 mm. broad, rounded at apex; stamens 12–18, usually 16, the filaments carnose, ligulate, 8–12 mm. long, 1.5–2 mm. broad, the anthers oblong, 5–9 mm. long, stout, sharply recurved in the distal 3–4 mm., the basal spur obtuse, 1.5–2.5 mm. long; style carnose, columnar, 12–16 mm. long, the locules 6–9; fruit depressed-globose, 10–15 mm. in diameter at maturity, the mature placentas 6–9, clavate, 4–6 mm. long, conspicuously retuse at apex, the seeds oblong-clavate, slender, angled, 1–2.5 mm. long.

VITI LEVU: Namosi: Vicinity of Namosi, alt. 400–500 m., *Gillespie 2869* (Bish, NY, UC) (native name: *thava*), *Gillespie 2974* (Bish, UC); Rewa: Hill forests, alt. 500 m., *Parks 20396* (Bish, UC) (tree 20 m. high); Virea-Nasongo trail, alt. 400 m., *Parks 20456* (Bish, UC) (tree 6–8 m. high, in thick forest); Naitasiri: Korombamba Mt., *Meebold 16669* (Bish, NY); vicinity of Nasinu, alt. 150 m., *Gillespie 3403* (Bish, UC) (tree 8 m. high, in woods). TAVEUNI: Borders of lake east of Somosomo, alt. 700–900 m., *Smith 859* (Bish, GH, NY, UC, US) (spreading tree 6 m. high, in dense forest). WITHOUT DEFINITE LOCALITY: *Horne 200* (GH).

Although I have not examined the type (*Seemann 181*, from Namosi) in connection with all the cited specimens, I saw it at Kew in 1935 and noted that *Smith 859* was a good match. The species is very distinct in the large size of all its parts, as noted in the key.

7. **Astronidium sessile** (A. C. Sm.) comb. nov.

*Astronia sessilis* A. C. Sm. in Bishop Mus. Bull. **141:** 111. *f. 58.* 1936.

VANUA LEVU: Thakaundrove-Mathuata boundary: Crest of Korotini Range, between Navitho Pass and Mt. Ndelaikoro, alt. 650–900 m., *Smith 533* (Bish, TYPE, NY) (shrub 2 m. high, in dry forest).

Since only the type collection is known, the original description is adequate.

8. **Astronidium macranthum** (A. C. Sm.) comb. nov.

*Astronia macrantha* A. C. Sm. in Bishop Mus. Bull. **141:** 113. *f. 59.* 1936.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, on edge of forest near Vatuthere, alt. 900 m., *Gillespie 4270* (Bish, GH, UC). VANUA LEVU: Mbua: Southern portion of Seatovo Range, alt. 100–350 m., *Smith 1525* (Bish, GH, NY, UC, US) (tree 7 m. high, in forest), *Smith 1706* (Bish, TYPE, GH, NY, UC, US) (small spreading tree 3–6 m. high, common in dry forest; petals white).

The original description of this species does not need amplification, except to note that the Gillespie specimen has leaf-blades up to 14 cm. long and 6.5 cm. broad. *Astronidium macranthum* is readily distinguished from *A. robustum* by foliage characters, but the two species are closely allied.

9. **Astronidium Degeneri** sp. nov.

Arbor parva ubique calyce obscure lepidoto excepto glabra, ramulis crassis subteretibus vel apicem versus quadrangulatis, internodiis brevibus; petiolis gracilibus obscure canaliculatis 2–4 cm. longis, laminis chartaceis vel subcoriaceis siccitate viridibus oblongo-ellipticis, 8–14 cm. longis, 3–6.5 cm. latis, basi obtusis, apice rotundatis vel obtusis, margine leviter recurvatis, 3-pli-nerviis, nervis ad 1 cm. interdum conjunctis supra subplanis vel leviter insculptis subtus prominentibus, nervis marginalibus 0.5–1 mm. intra marginem inconspicuis, venulis transversis supra subplanis subtus prominulis, rete venularum immerso; in-

florescentia terminali trichotome cymosa, 7–12 cm. longa, 9–17 cm. lata, ramulis complanatis, bracteis bracteolisque mox caducis, floribus plerumque ternatis subsessilibus, pedicellis inconspicuis ad 1 mm. longis; calyce coriaceo inconspicue ferrugineo-lepidoto cupuliformi, 8–9 mm. longo, circiter 7 mm. diametro, limbo sub anthesi erecto circiter 3.5 mm. longo in lobis 5 vel 6 ovato-deltoideis subacutis 2–3 mm. longis et 2–4 mm. latis rupto; petalis circiter 7 albis submembranaceis obovato-oblongis, 7–8 mm. longis, 3–4 mm. latis, apice rotundatis vel apiculatis, basim versus leviter angustatis; staminibus plerumque 14, filamentis carnosis ligulatis circiter 7 mm. longis, antheris oblongis 5–5.5 mm. longis apice conspicue recurvatis, calcare basilari subacuto circiter 1.5 mm. longo; stylo carnoso petalis subaequali, stigmate rotundato-truncato, loculis plerumque 7, placentis suberectis, ovulis numerosis.

VITI LEVU: Tholo West: Yawe, vicinity of Mbelo, near Vatukarasa, alt. 300 m., *Degener 15279* (A, TYPE), May 15, 1941 (small tree, in forest; petals white).

Compared with its nearest relatives, *A. macranthum* and *A. robustum,* the new species has fairly small flowers, which, however, are larger than those of such species as *A. victoriae* and its allies. In addition, the nearly sessile flowers readily distinguish *A. Degeneri.*

10. **Astronidium tomentosum** (Seem.) comb. nov.

*Astronia tomentosa* Seem. Fl. Vit. 86. 1865; Triana in Trans. Linn. Soc. **28**: 152. 1871; Cogn. in DC. Monogr. Phan. **7**: 1099. 1891.

Small tree or shrub, the young branchlets, petioles, lower surfaces of leaf-blades, inflorescence-branches, bracts, bracteoles, pedicels, and calyces densely and persistently lepidote with minute ciliolate or substellate scales less than 0.1 mm. in diameter, the branchlets stout, subterete; petioles shallowly canaliculate, 1.5–4 cm. long; leaf-blades coriaceous or subcoriaceous, glabrous above, elliptic- or ovate-oblong, 5–9 cm. long, 2–4.5 cm. broad, rounded or faintly cordate at base, obtuse at apex, narrowly recurved at margin, the nerves 3 or 5, ascending from base, slightly impressed above and prominent beneath, the marginal nerves obscure, the cross-veins subimmersed or slightly impressed above and prominulous beneath; inflorescence terminal, trichotomously cymose, 3–10 cm. long and slightly broader, the branchlets angled, the bracts chartaceous, obovate-linear, 4–7 mm. long, the bracteoles similar but 2–4 mm. long; flowers crowded, usually in threes, the pedicels inconspicuous, less than 1 mm. long; calyx subglobose in bud, 2.5–3 mm. in diameter before dehiscence; petals 5, broadly ovate and minute in bud; stamens 10 (very immature in our material); ovary-locules 5; fruit depressed-globose, 6–7 mm. in diameter at maturity, the mature placentas 5, suberect, clavate, about 2 mm. long, retuse or flattened at apex.

VITI LEVU: Namosi: Voma Mt., on or near summit, alt. 900–1000 m., *Seemann 174* (GH, TYPE COLL.), *Gillespie 2725* (Bish), *2796* (Bish, UC); Vakarongasiu Mt., summit, alt. 950 m., *Gillespie 3281* (Bish).

This apparently very local species is not well named, the indument being essentially lepidote rather than tomentose. Although mature flowers are not yet available, the species is quite unmistakable.

11. **Astronidium Storckii** Seem. Fl. Vit. 87. 1865; Markgraf in Notizbl. Bot. Gard. Berlin **12**: 49. 1934.

*Astronia Storckii* Seem. in Bonplandia **10**: 296, nomen. 1862; Triana in Trans. Linn. Soc. **28**: 152. 1871; Cogn. in DC. Monogr. Phan. **7**: 1099. 1891.

Small tree, to 5 m. high (or more?), the young branchlets, petioles, lower surfaces of leaf-blades, inflorescence-parts, and calyx subhispid with persistent simple subulate brown hairs 1–2.5 mm. long, the branchlets stout, subterete or distally quadrangular; petioles shallowly canaliculate, 3.5–6.5 cm. long; leaf-blades subcoriaceous, sparsely hispid above and glabrescent except on nerves,

elliptic, 10–22 cm. long, 4–11 cm. broad, obtuse or rounded at base, gradually short-acuminate at apex, slightly recurved at margin, the principal nerves 5, oriented from base, slightly impressed above and prominent beneath, the marginal collecting-nerves faint, the cross-veins slightly impressed above and sharply raised beneath; inflorescence terminal, trichotomously cymose, 8–10 cm. long, 10–17 cm. broad, the branchlets lightly quadrangular, the bracts chartaceous, obovate-oblong, 7–12 mm. long, the bracteoles similar but smaller; flowers crowded, the pedicels 1 mm. long or less; calyx ovoid and closed in bud; petals 4 or 5 (or 6?), deltoid-ovate in bud; stamens apparently 8 or 10 (or 12?); ovary 4-celled (ex Seemann) or 5- or 6-celled; mature fruit 7–10 mm. in diameter, the mature placentas often 6 (in our material), suberect, clavate, about 2.5 mm. long, lightly retuse at apex.

VITI LEVU: N a m o s i: Naitarandamu Mt., summit, alt. 1200 m., *Gillespie 3133* (Bish, UC); N a i t a s i r i: Suva Pumping Station, alt. 30 m., *Degener & Ordonez 13745* (A) (tree 5 m. high, in forest).

The type of this species is *Storck 890,* from Ovalau, for which Seemann reports the native name *thavathava*.

12. **Astronidium kasiense** sp. nov.

*Astronidium Storckii* sensu A. C. Sm. in Bishop Mus. Bull. **141**: 115. 1936; non Seem.

Arbor ad 7 m. alta, ramulis novellis, petiolis, foliis subtus, ramulis inflorescentiae, bracteis, bracteolis, et calycibus dense et arcte tomentellis vel puberulis (pilis ferrugineis persistentibus simplicibus saepe clavatis 0.2–0.5 mm. longis); ramulis crassis apicem versus quadrangulatis; petiolis crassis obscure canaliculatis 3–7 cm. longis, laminis chartaceis ovato-ellipticis, 13–23 cm. longis, 7–12 cm. latis, supra olivaceis glabris saepe rugulosis, basi rotundatis vel obscure subcordatis, apice gradatim et breviter acuminatis, margine paullo recurvatis, 5-pli-nerviis, nervis ad 7 mm. interdum conjunctis supra leviter impressis subtus prominentibus, nervis marginalibus circiter 1 mm. intra marginem subtus prominulis, venulis transversis numerosis supra planis vel insculptis subtus valde prominulis, rete venularum intricato subtus prominulo; inflorescentia terminali trichotome cymosa, ad 15 cm. longa et lata, ramulis crassis leviter angulatis, bracteis oblongis ad 6 mm. longis et 3 mm. latis, bracteolis similibus sed minoribus, floribus juvenilibus subsessilibus dense aggregatis; calyce in alabastro clauso ellipsoideo; petalis 4 in alabastro late ovatis; staminibus 8; stylo crasso, stigmate rotundato-truncato; ovario 4-loculare, placentis immaturis clavatis quam longis latioribus.

VANUA LEVU: T h a k a u n d r o v e: Yanawai River region, Mt. Kasi, alt. 300–430 m., *Smith 1799* (Bish, GH, NY, TYPE, UC, US), May 10, 1934 (tree 7 m. high, in dense forest; native name: *rusila*).

In comparing this specimen with the type of *A. Storckii* at Kew, I was inclined in 1935 to consider them conspecific, but more careful comparison with the recent collections of *A. Storckii* indicates that dependable characters of pubescence make advisable the description of this new species. The two species are quite similar in shape, texture, and venation of leaf-blades.

## ONAGRACEAE

**Jussiaea erecta** L. Sp. Pl. 388. 1753; Setchell in Carn. Inst. Publ. **341**: 61. 1924; Christoph. in Bishop Mus. Bull. **128**: 160. 1935.

VITI LEVU: T h o l o N o r t h: Korovou, east of Tavua, alt. 30–75 m., *Degener 14963* (A) (along stream in dry meadow; native name: *naingisa*).

This species and the following are naturalized weeds which apparently have previously escaped collection in Fiji. The family, as far as I can ascertain, is not otherwise represented by Fijian herbarium material.

**Jussiaea suffruticosa** L. Sp. Pl. 388. 1753.

VITI LEVU: Tholo North: Nandarivatu, alt. about 800 m., *Degener & Ordonez 13545* (A) (shrub 1–2 m. high, along stream in sun).

The cited specimen is apparently a very pubescent form of the widespread species.

## UMBELLIFERAE

**Hydrocotyle javanica** Thunb. Diss. Hydrocot. 6. *pl. 1.* 1798.

TAVEUNI: Western slope, between Somosomo and Wairiki, alt. 300–600 m., *Smith 915* (GH, NY) (in dense mats in forest).

The cited specimen closely matches material from India, Sumatra, Java, New Guinea, etc., but I believe that the species has not otherwise been reported from our region. Nothing in its habitat causes me to believe that the plant was introduced or escaped in Taveuni, but of course this may have been the case. The determination is by Dr. B. H. Danser.

## MYRSINACEAE

**Embelia gracilis** Turrill in Jour. Linn. Soc. Bot. **43:** 30. 1915.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. about 750 m., *Degener 14307* (A) (liana, scrambling over bushes in forest; flowers whitish; fruit red, succulent); Sovutawambu, near Nandarivatu, alt. about 750 m., *Degener 14662* (A) (liana, in forest); Ra: Vatundamusewa, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15453* (A) (liana, in partly sunny forest; fruit red; native name: *wandrenga*); Tholo West: Uluvatu, vicinity of Mbelo, near Vatukarasa, alt. 300 m., *Degener 15259* (A) (liana, in forest); Yawe, near Mbelo, *Degener 15268* (A) (liana, in forest; fruit red; native name: *wakai*); Serua: Vatuvilakia, near Ngaloa, alt. 90 m., *Degener 15163* (A) (liana, in forest).

It is remarkable that the present collection contains six numbers of *Embelia,* which up to the present seems to have been represented from Fiji only by the type of *E. gracilis.* Although I have not seen this type, Degener's numbers *14307* and *14662* match the original description in all details; these numbers, from essentially the type-locality, have the leaves punctate with abundant pellucid glands. The remaining cited numbers were collected at much lower elevations and have the leaves with comparatively few and subopaque glands. In other respects I can find no essential differences among the specimens. Numbers *14307, 14662,* and *15163* bear inflorescences, which are identical in all respects. The remaining specimens, and also *14307,* are in fruit, showing no characters of difference. The lowland collections show considerable variation in leaf-size, *15453* having blades up to 5 cm. long and 3.5 cm. broad, but various leaf-sizes may be found on the same specimens. I assume that the variation in leaf-punctation depends upon whether or not the plant grows in deep shade, but it is conceivable that the collection of additional material will permit the recognition of two forms or even species.

## OLEACEAE

By C. E. KOBUSKI

**Jasminum Smithianum** Kobuski, sp. nov.

Frutex subscandens, ramulis griseis, hornotinis viridibus puberulis. Folia opposita, trifoliolata, coriacea vel chartacea, glabrescentia, petiolis puberulis, 1.0–1.5 cm. longis, foliolis ovatis parvis 1–3 cm. longis et 0.8–1.5 cm. latis basi rotundatis vel truncatis, apice acutis, supra atrovirentibus, nitidis, subtus pallidioribus, juventute margine et costa subtus puberulis, venis supra impressis, subtus elevatis,

infimis longe adscendentibus, ceteris 2–3 (paribus) arcuatis intramarginale conjunctis, petiolulis puberulis ad 0.5 cm. longis. Inflorescentia axillaris cymosa. Bracteoli 2, lineari-acuminati, pubescentes, ca. 2 mm. longi. Calyx dense puberulus, tubo ca. 2 mm. longo, fauce ca. 1.5 mm. diametro, lobis 5 minutissime subulatis vel haud manifestis. Corolla parva, alba, tubo 5.0–5.5 mm. longo, fauce ca. 1.5 mm. diametro, lobis 5, ovatis vel obovatis, ca. 3 mm. longis et 2.5 mm. latis. Stamina 2, exserta, filamentis 3 mm. longis basi corollam 2.5 mm. adnatis, antheris linearibus 3 mm. longis. Fructus ignotus.

VITI LEVU: Nandi: Korovou, near Nandi, among rocks along arid coast, *Degener 15321* (A, TYPE), May 27, 1941 (subscandent shrub with white flowers).

This species is characterized by very small, shining, dark green, trifoliolate leaves, pubescent when young, especially on the lower midrib, in the angles of the veins and along the margin. The flowers are correspondingly small with pubescent calyx-lobes, bracteoles and pedicels. The stamens are exserted. The closest relative is *J. Degeneri,* which has similar flower structure and pubescence but much larger, opaque, membranaceous leaves and a distinctly climbing habit. Also somewhat closely allied is *J. didymum* Forst., which can be separated, however, by the strictly glabrous, larger leaves.

This species is named in honor of Dr. A. C. Smith, the author of this paper, whose interest in and work on the Fijian flora are well known.

**Jasminum Degeneri** Kobuski, sp. nov.

Scandens, ramulis brunneis, hornotinis aureo-viridibus puberulis. Folia opposita, trifoliolata, membranacea vel chartacea, glabrescentia, petiolis puberulis 0.8–1.5 cm. longis, foliolis ovatis (2.5–) 3–5 (–6) cm. longis et (1.5–) 2–3 (–4) cm. latis, basi truncatis vel rotundatis, apice acuminatis, juventute costa subtus subpuberulis, venis undique elevatis, 3–4 paribus adscendentibus, petiolulis puberulis 0.6–1.0 cm. longis. Inflorescentia axillaris, cymosa. Bracteoli linearilanceolati, pubescentes, 1 mm. vel minus longi. Calyx dense puberulus, tubo ca. 2 mm. longo, lobis 5, minutissime setaceis vel haud manifestis. Corolla alba, parva, tubo 7–9 mm. longo et fauce ca. 1 mm. diametro, lobis 5, ovatis vel obovatis, ca. 3 mm. longis et 2.0–2.5 mm. latis. Stamina 2, inclusa, filamentis ca. 3 mm. longis, corollam totis vel interdum partim adnatis, antheris linearibus 3 mm. longis. Fructus ignotus.

VITI LEVU: Tholo North: Fatia, west of Tavua, alt. 30–150 m., *Degener 14980* (A, TYPE), April 2, 1941 (liana with white flowers). PRECISE LOCALITY LACKING: *U. S. Expl. Exped.* (GH).

As stated under the previous species, a close relationship exists between *J. Smithianum* and *J. Degeneri.* Both are trifoliolate, small-flowered and pubescent on the flowers as well as on the very young growth. In this species, the leaves are opaque, membranaceous, and considerably larger, with the veins raised on both surfaces and not anastomosing into a second margin. The stamens, although possessing approximately the same measurements, are included, and the corolla is about 2 mm. longer.

## LOGANIACEAE

**Geniostoma vitiense** Gilg & Benedict in Bot. Jahrb. **56**: 542. 1921.

*Geniostoma rupestre* var. *puberulum* A. Gray in Proc. Am. Acad. **4**: 321, nomen. 1859.

VANUA LEVU: Mbua: Rukuruku Bay, *Parham 5* (GH); Thakaundrove: Eastern drainage of Yanawai River, alt. 60 m., *Degener & Ordonez 14104* (A) (shrub, in open forest); hills south of Nakula Valley, alt. 10–30 m., *Smith 326* (GH, NY) (shrub 3 m. high, in woods); Maravu, near Salt Lake, alt. 90 m., *Degener & Ordonez 14233* (A) (tree 5 m. high, on reed-covered forehill). WITHOUT DEFINITE LOCALITY: *Seemann 301* (GH, TYPE COLL.); *U. S. Expl. Exped.* (GH, as *G. rupestre* var. *puberulum*).

Previously reported only from the type collection, *G. vitiense* appears to occur fairly commonly, being distinguishable from *G. rupestre* by its pubescence and floral characters. The leaves of the type are somewhat smaller than the average of the other cited specimens; leaf-blades sometimes attain a size up to 12 cm. long and 6.5 cm. broad.

**Geniostoma stenocarpum** sp. nov.

Frutex vel arbor parva ad 3 m. alta, ramulis subteretibus fusco-cinereis juventute interdum ferrugineo-puberulis mox glabris; stipulis parvis rotundato-ovatis mox glabris; petiolis gracilibus leviter canaliculatis 2–5 mm. longis, laminis chartaceis glabris in sicco fuscis anguste elliptico-oblongis, 4–7 cm. longis, 1.2–2.5 cm. latis, basi acutis vel attenuatis et in petiolum decurrentibus, apice subacutis et saepe mucronulatis, margine integris et leviter recurvatis, costa supra insculpta subtus prominente, nervis secundariis utrinsecus 4–6 adscendentibus supra planis vel leviter insculptis subtus paullo elevatis, venulis immersis; inflorescentiis 1–3 in axillis foliorum cymosis gracilibus sub anthesi 7–15 mm. longis paucifloris, pedunculo et ramulis secundariis paucis brevibus glabris, bracteis acutis ovato-deltoideis 0.5–1 mm. longis; pedicellis gracilibus sub anthesi 2–3 mm. sub fructu ad 6 mm. longis, decidue 2- vel 4-bracteolatis, bracteolis oppositis vel subopppositis adpressis oblongis circiter 0.8 mm. longis margine ciliolatis; lobis calycis submembranaceis anguste imbricatis ovato-lanceolatis, 0.7–1 mm. longis, apice acutis, extus puberulis, intus glabris; corolla membranacea breviter tubulosa sub anthesi 2.5–3 mm. longa et 3 mm. diametro, extus obscure puberula vel basim versus glabra, tubo pilis brevibus albidis intus distaliter retrorso-piloso, lobis 5 ovato-oblongis circiter 1.6 mm. longis et 1.4 mm. latis subacutis margine ciliolatis uninervatis, nervo distaliter pauciramoso; staminibus fauce insertis, filamentis deltoideo-ligulatis circiter 0.6 mm. longis intus pilis circiter 0.4 mm. longis retrorse barbato-hirsutis, antheris oblongis circiter 0.8 mm. longis, apice obtusis, basi cordatis; ovario glabro depresso-globoso sub anthesi circiter 1 mm. diametro, stylo gracili circiter 0.7 mm. longo, stigmate subgloboso circiter 0.5 mm. diametro papilloso; fructibus anguste ellipsoideis, 7–10 mm. longis, 2.5–3 mm. latis, basi obtusis, apice attenuatis et stylo persistente coronatis, valvis maturis apertis, placentis persistentibus semina numerosa gerentibus.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 750–850 m., *Degener & Ordonez 13591* (A, TYPE), Nov. 22, 1940 (shrub, in rain-forest; flowers whitish), *Degener & Ordonez 13592* (A) (shrub about 1 m. high; flowers yellowish white), *Degener 14314* (A) (small tree to 3 m. high, in open forest).

*Geniostoma stenocarpum* is characterized by its glabrous comparatively small and narrow leaf-blades, which are acute at the base, its short corollas and conspicuously barbate filaments, and its comparatively long and narrow fruits. In floral characters it resembles *G. vitiense* Gilg & Benedict, but that species has more persistently pubescent branchlets and leaf-blades, which are rounded at the base, pilose on the lower surface (persistently so on the costa), and generally larger.

*Geniostoma rupestre* Forst. has doubtless been too broadly interpreted, as suggested by Gilg and Benedict (in Bot. Jahrb. **56**: 542. 1921). However, if I correctly understand their analysis, based on a duplicate of the type, it is the common lowland species in Fiji, characterized by its strictly glabrous habit and shining leaves. Its corolla-tube at anthesis is longer than the lobes and its throat is uniformly pilose with short spreading hairs; each lobe is supplied by 3 nerves which separate at the base of the corolla and then ascend without further branching. On the other hand, both *G. vitiense* and *G. stenocarpum* have the corolla-tube about equal to the lobes and its throat pilose with reflexed hairs; each lobe is supplied by a single nerve, which divides into 3 only at the summit of the tube,

each branch usually being further divided distally. Some of Gray's varieties (*nomina nuda* in Proc. Am. Acad. **4**: 321. 1859) of *G. rupestre* should be referred to other species.

**Geniostoma calcicola** sp. nov.

Frutex scandens ad 50 cm. altus, ramulis gracilibus subteretibus fusco-cinereis juventute breviter et densissime pallido-setosis demum glabris; stipulis parvis late ovatis; petiolis gracilibus 3–5 mm. longis ut ramulis hirsutis, laminis chartaceis in sicco fuscis vel olivaceis oblongo-ellipticis, 3.5–5 cm. longis, 1.5–2.5 cm. latis, basi obtusis, apice rotundatis vel leviter emarginatis et interdum inconspicue mucronulatis, margine integris et leviter recurvatis, utrinque pilis pallidis circiter 0.3 mm. longis erectis pilosis, costa supra leviter impressa subtus elevata, nervis lateralibus utrinsecus 4–6 brevibus supra immersis subtus leviter prominulis, venulis immersis; inflorescentiis axillaribus plerumque solitariis gracilibus cymosis sub anthesi 8–12 mm. longis paucifloris, pedunculo brevi et ramulis paucis pallide puberulis, bracteis ovatis minutis; pedicellis gracilibus sub anthesi 2–5 mm. longis decidue 2–4-bracteolatis, bracteolis membranaceis adpressis oblongo-lanceolatis acutis ciliolatis circiter 1 mm. longis; calyce cupuliformi fere ad basim 5-lobato, lobis membranaceis acutis ovato-deltoideis, 1.2–1.5 mm. longis et latis, sparse glanduloso-punctatis, margine ciliolatis; corolla membranacea breviter tubulosa sub anthesi 3.5–4 mm. longa extus glabra, tubo circiter 2.5 mm. diametro pilis laxis patentibus pallidis circiter 0.8 mm. longis intus dense piloso, lobis 5 sub anthesi reflexis oblongo-ovatis, circiter 1.5 mm. longis et 2 mm. latis, apice obtusis, uninervatis, nervo distaliter pauciramoso; staminibus fauce insertis, filamentis ligulatis circiter 0.4 mm. longis parce pilosis, antheris oblongis circiter 1 mm. longis, apice obtusis, basi cordatis; ovario glabro depresso-globoso sub anthesi circiter 1.3 mm. diametro, stylo circiter 1 mm. longo, stigmate subgloboso circiter 0.8 mm. diametro papilloso.

FULANGA: Near Monothaki, *Smith 1116* (GH, TYPE, NY), Feb. 22, 1934 (scandent shrub, to 50 cm. high, on cliff face in limestone formation; corolla white).

*Geniostoma calcicola* is typified by a specimen to which I referred (in Bishop Mus. Bull. **141**: 125. 1936) as a relative of *G. crassifolium* Benth. It differs sharply from that New Caledonian species, however, in its low habit and much smaller leaves. In floral characters, *G. calcicola* is allied to *G. vitiense* Gilg & Benedict and the type specimen has a very similar indument, but in habit and foliage the two species are easily distinguished.

I have seen three specimens which are very similar in habit and flowers to the type of *G. calcicola: Smith 1203* (GH, NY), from Fulanga, *Seemann 300* (GH), from Fiji but without definite locality, and *U. S. Expl. Exped.* (GH), from Tonga, determined by Gray as *G. rupestre* var. *ellipticum*. However, these three specimens have the branchlets and leaves entirely glabrous or only obscurely puberulent, and their corollas lack the conspicuous lax hairs described above, being merely puberulent within. I am at a loss to know how much value to attach to characters of pubescence in this case, especially since one of the specimens is from Fulanga. Before deciding whether the concept of *G. calcicola* should be extended to include this glabrous form, I should like to see additional material of the complex from southern Lau and Tonga.

COUTHOVIA A. Gray

It has been customary to place the Fijian specimens of *Couthovia* in two species, *C. corynocarpa* A. Gray and *C. Seemanni* A. Gray. The first of these, which is the genotype, was based on a fruiting specimen collected by the U. S.

Exploring Expedition, the second on *Seemann 305,* a flowering specimen. In proposing *C. Seemanni,* Gray (in Proc. Am. Acad. **5**: 320. 1862) expressed doubt of its distinctness from *C. corynocarpa.* In order to decide whether or not these plants are conspecific, I have compared type material of each and have examined an extensive series of more recently collected Fijian specimens of the genus. The two type collections agree very closely in all essential details; some of the leaves of *C. corynocarpa* appear to be slightly smaller, but it is to be noted that these small leaves are accompanied by others on the same branchlets which are as large as those of the type of *C. Seemanni.* It appears to be a characteristic of this species to bear occasional short branchlets, near the apices of branches, which have a pair of small and presumably juvenile leaves. *Seemann 305* (GH) also shows these small apical leaves. In spite of the lack of flowers from the type collection of *C. corynocarpa,* I have no doubt that the two plants under consideration are conspecific.

Gray, in proposing *C. Seemanni* as a distinct species, was probably influenced by Seemann's field notes, which remark upon the difference in habit between *Seemann 305* and *Seemann 303,* the latter of which Gray (in Proc. Am. Acad. **5**: 320. 1862) had identified as *C. corynocarpa.* While Seemann was certainly correct in referring his numbers *305* and *303* to different species, I cannot agree with either him (Fl. Vit. 165. 1866) or Gray that no. *303* represents *C. corynocarpa.* Seemann apparently saw only these two specimens of *Couthovia.* To revise his treatment: no. *305,* the type of *C. Seemanni,* is referable to *C. corynocarpa,* while no. *303,* determined as *C. corynocarpa,* represents an undescribed species. I refer the latter specimen to *C. macrocarpa.*

Gillespie's treatment of the genus (in Bishop Mus. Bull. **83**: *28–29. fig. 35, 36.* 1931) further complicates the situation. He states that the subject of Seemann's *pl. 32* "can not be other than" *Seemann 305.* This is certainly not the case. *Seemann 305* has the pubescence of the corolla limited to the throat, while Seemann's *pl. 32* shows the tube also pubescent below the throat. Furthermore, there is nothing in Seemann's text to indicate that his no. *305* was accompanied by fruits, and a fruit is illustrated on *pl. 32.* The only number which Seemann cites as *C. corynocarpa* is his no. *303,* and this surely is the basis of his *pl. 32.* This specimen, like the plate, shows the corolla-tube to be uniformly pilose within and is accompanied by a large woody fruit identical with that illustrated. Furthermore, Seemann says that *C. corynocarpa* (i.e. no. *303*) has "dark-green foliage (made rather too light by our colourist)." The specimen of *Seemann 303* bears out this observation.

In referring a series of several small-leaved specimens to *C. corynocarpa,* Gillespie appears to have depended upon a photograph of the type collection in the Gray Herbarium. He remarks that "the leaves of the Gray specimen are about 11 cm. long and 5 cm. broad, somewhat larger than those of our collections." While this is true, it must be further remarked that other sheets of the Exploring Expedition type collection of *C. corynocarpa* (at NY, US) have the leaf-blades up to 13.5 by 10 cm. It is noteworthy that the small-leaved specimens referred by Gillespie to *C. corynocarpa* occur at elevations of 500–1300 meters, while the type doubtless came from a low elevation. From a re-examination of the material, I must conclude that Gillespie's description and illustration of *"C. corynocarpa"* refer to an unnamed species, which I shall call *C. collina.* His description and illustration of *C. Seemanni* are referable to *C. corynocarpa,* but the specimens cited are referable only in part to *C. corynocarpa.* Three of them (*Parks 20869,*

*Gillespie 2095* and *2433*) represent the new species which I shall call *C. alata,* while one other (*Gillespie 2590*) represents my *C. macrocarpa.*

I have discussed past interpretations of this complex in some detail, since it now appears that six well-marked species of *Couthovia* are distinguishable in Fiji. Therefore, the proper placing of Gray's two names is essential. It seems unfortunate that these names are synonyms, but on the basis of the extensive material at hand I find it necessary to make this reduction and to propose the other five species as new. All of the six Fijian species appear to be endemic; they have been carefully compared with the other species of the genus thus far described from the Pacific (i.e. *C. neo-ebudica* Guillaumin from the New Hebrides, *C. novocaledonica* Gilg and Benedict from New Caledonia, and *C. calophylla* Gilg & Benedict and *C. Toua* Kanehira from Micronesia). An interesting discussion of the genus and a treatment of nine Papuasian species was published by Gilg & Benedict (in Bot. Jahrb. **54**: 174–183. *fig. 8, 9.* 1916).

Of the Fijian species, *C. corynocarpa* is the most abundant, at least at low elevations; it is characterized by its smooth stipules, large petiolate leaves, and glabrous corolla-tube. With essentially similar flowers are *C. collina, C. alata,* and *C. macroloba,* but each is easily recognized by one or more obvious characters. The two remaining Fijian species, *C. macrocarpa* and *C. pachyantha,* have the corolla-tube pilose within as well as barbate at its apex, and they are further distinguished by their large fruits. It seems likely that all of these species have been derived from *C. corynocarpa* and therefore are more closely related to each other than to any of the non-Fijian species.

### Key to the Fijian species

Corolla barbate at throat within, otherwise glabrous; style less than 1 mm. long; mature fruit obovoid, clavate, comparatively slender, not more than 13 mm. in diameter.
- Stipules forming a sheath 2–5 mm. high; leaf-blades obovate-oblong, 4.5–9 cm. long, 2–5 cm. broad; occurring above 500 m. ..... 1. *C. collina.*
- Stipules forming a sheath 4–15 mm. high; leaf-blades (9–) 11–25 cm. long and 5–12 cm. broad or larger.
  - Petioles 4–10 mm. long or more, sometimes angled but scarcely winged; leaf-blades broadly elliptic, the secondaries usually spreading; corolla 4–6 mm. long, the lobes 2–2.5 mm. long, thin-carnose; anthers 1.3–1.5 mm. long. ..... 2. *C. corynocarpa.*
  - Petioles very short, conspicuously winged, the wings 1–3 mm. broad, confluent with those of the opposite petiole (i. e. the stipule-sheaths horizontally winged); leaf-blades oblong-obovate, the secondaries ascending; flowers as in the preceding. 3. *C. alata.*
  - Petioles essentially none; leaf-blades obovate-elliptic, the secondaries ascending; corolla 6.5–7 mm. long, the lobes 3–4 mm. long, thick-carnose; anthers 1.8–2 mm. long. 4. *C. macroloba.*

Corolla barbate at throat within and also pubescent toward base of tube within; style 1.5–2.5 mm. long; mature fruit elliptic-obovoid, gradually narrowed or rounded toward base, often somewhat flattened, 18–28 mm. broad; leaf-blades broadly elliptic, the secondaries spreading.
- Corolla thin-carnose, the tube 2.5–3 mm. in diameter, the lobes 1.5–2 mm. broad; hairs at base of lobes lax, 0.5–0.7 mm. long; corolla-tube tomentellous within, the hairs lax, tangled ..... 5. *C. macrocarpa.*
- Corolla thick-carnose, the tube 4–5 mm. in diameter, the lobes 2.5–3 mm. broad; hairs at base of lobes stiff, about 1.3 mm. long; corolla-tube strigose within, the hairs stiff. 6. *C. pachyantha.*

1. **Couthovia collina** sp. nov.

*Couthovia corynocarpa* sensu Gillespie in Bishop Mus. Bull. **83**: 28 (quoad descr.). *fig. 35.* 1931; non A. Gray.

*Couthovia Seemannii* sensu Gibbs in Jour. Linn. Soc. Bot. **39**: 157. 1909; non *C. Seemanni* A. Gray.

Frutex vel arbor ad 5 m. alta (vel ultra?) corolla intus barbata excepta glabra, ramulis fuscis subteretibus saepe striatis, internodiis junioribus 0.5–3 cm. longis; stipulis interpetiolaribus subcoriaceis, apice rotundatis, inter sese et cum petiolis connatis et cupulam 2–5 mm. altam formantibus, non longitudinaliter fissis; petiolis gracilibus supra complanatis vel leviter canaliculatis 2–9 mm. longis (supra stipulas); laminis plerumque subcoriaceis et obovato-oblongis, 4.5–9 cm. longis, 2–5 cm. latis, basi attenuatis vel raro obtusis, apice rotundatis vel late obtusis, margine saepe paullo revolutis, utrinque subnitidis, costa supra leviter elevata subtus prominente, nervis secundariis utrinsecus 5–10 patentibus subrectis supra paullo subtus manifeste elevatis, rete venularum laxe reticulato immerso vel inconspicue prominulo; floribus in apice ramulorum in corymbos 1–3 (cymosos, cymis 2- vel 3-plo divisis) dispositis, pedunculis ad 4 cm. longis gracilibus, cymae ramulis primariis 2–10 mm. longis, pedicellis subnullis bracteis inconspicuis ovatis acutis circiter 1 mm. longis; calyce papyraceo cupuliformi fere ad basim 5-lobato, lobis anguste imbricatis orbiculari-oblongis, 1.2–1.5 mm. longis, 1.5–2 mm. latis, apice rotundatis, margine minute ciliolatis; corolla subcarnosa obscure luteo-glandulosa 4–5.5 mm. longa, lobis oblongis, 2–2.5 mm. longis, 1.2–1.5 mm. latis, apice subacutis et saepe incrassatis, tubo 2–3 mm. diametro apice pilis rectis 1–1.3 mm. longis dense barbato cetera glabro; staminibus 5 tubo insertis, filamentis gracilibus 0.5–0.7 mm. longis, antheris oblongis 1.3–1.6 mm. longis glabris vel basi minute puberulis; ovario ellipsoideo luteo-glanduloso minute puberulo mox glabro, stylo 0.4–0.8 mm. longo, stigmate subcapitato minute papilloso; fructibus obovoideis clavatis, 16–22 mm. longis, 7–10 mm. diametro, infra medium vel basim versus abrupte contractis, apice rotundatis et mucronulatis.

Viti Levu: Tholo North: Loma Langa Mt., alt. 1050 m., *Gillespie 3913* (Bish, TYPE, NY, UC), Nov. 21, 1927 (in forest on slopes); summit of Loma Langa Mt., alt. 1200 m., *Gillespie 3929* (Bish); vicinity of Nandarivatu, alt. 750–1200 m., *Degener 14370* (A) (shrub, in forest; fruit whitish; native name: *ngingila*), *Gillespie 3969* (Bish, UC) (latex milky; flowers and fruit white; native name: *nduva*), *Parks 20740* (Bish, UC) (shrub 2–4 m. high, in dense forest; flowers waxy-white; fruit white); Namosi: Slope of Voma Mt., alt. 500 m., *Gillespie 2908* (Bish, NY) (native name: *kau toi*); Naitarandamu Mt., alt. 800 m., *Gillespie 3100* (Bish, UC) (flowers white, odorless). Vanua Levu: Thakaundrove-Mathuata boundary: Crest of Korotini Range, between Navitho Pass and Mt. Ndelaikoro, alt. 650–900 m., *Smith 552* (Bish, GH, NY, UC, US) (tree 5 m. high, in dry forest; corolla and anthers white; fruit white at maturity; native name: *theketheke*).

Thus far this small-leaved species has been found only at comparatively high elevations on the two larger islands. Although its floral characters and its fruits are essentially similar to those of *C. corynocarpa* A. Gray, it is readily distinguished by its smaller and more compact habit, small leaves and stipules, and compact inflorescences.

2. **Couthovia corynocarpa** A. Gray in Proc. Am. Acad. **4**: 324. 1859.

*Couthovia Seemanni* A. Gray in Proc. Am. Acad. **5**: 320. 1862; A. Gray in Bonplandia **10**: 37. 1862; Seem. in Bonplandia **10**: 296. 1862; Seem. Fl. Vit. 166. 1866; Gillespie in Bishop Mus. Bull. **83**: 29, in part (as *C. seemannii*). *fig. 36.* 1931.

*Gaertnera barbata* Seem. ex A. Gray in Bonplandia **10**: 37, nomen. 1862.

Spreading shrub or tree up to 15 m. high, glabrous throughout except for the barbate corolla-tube, the branchlets stout, dark brown or stramineous, often obviously lenticellate, subterete or distally quadrangular, the distal internodes 1.5–8 cm. long; stipules interpetiolar, often coriaceous, subtruncate or rounded at apex, connate with the petiole-bases and forming a cupuliform tube 4–15 mm. high which occasionally splits longitudinally; petioles stout, shallowly canaliculate, the free portion 4–10 (–30) mm. long, often angled but not winged; leaf-blades

chartaceous or subcoriaceous, broadly elliptic, (9–) 11–25 (–40) cm. long, (4–) 6–17 (–28) cm. broad, acute or subattenuate at base, obtuse at apex, often slightly recurved at margin, usually dull on both surfaces, the costa stout, usually slightly raised above and prominent beneath, the secondary nerves 5–10 per side, spreading, nearly straight, raised on both surfaces, the veinlet-reticulation lax, often immersed, sometimes slightly prominulous especially beneath; flowers arranged in 1–4 corymbs at the apices of branchlets, the common peduncle, if present, short and stout, the secondary peduncles to 7 cm. long, the corymbs cymose, 3 or 4 times divided, the primary branchlets of the cymes 6–30 mm. long, the flowers sessile, often paired at ends of short ultimate branchlets, the bracteoles deltoid, about 0.7 mm. long; calyx papyraceous, cupuliform, minutely yellow-glandular, deeply 5-lobed, the lobes narrowly imbricate, orbicular-oblong, 0.7–1.5 mm. long, 1.2–2 mm. broad, rounded at apex, glabrous or minutely ciliolate at margin; corolla submembranous at base, thin-carnose distally, 4–6 mm. long, the lobes oblong-deltoid, 2–2.5 mm. long, 1.2–1.7 mm. broad, subacute and often slightly thickened at apex, the tube 2–3 mm. in diameter, barbate at apex with straight hairs 0.8–1.3 mm. long, otherwise glabrous; stamens 5, inserted on the tube, the filaments slender, 0.8–1.3 mm. long, the anthers oblong, 1.3–1.5 mm. long, puberulent at base or glabrous; ovary ellipsoid, glabrous, sparsely yellow-glandular, the style 0.5–1 mm. long, the stigma minutely capitate; fruits obovoid, clavate, 15–30 mm. long, 8–11 mm. broad, sharply contracted slightly below middle or nearer base, acute to rounded at apex and often conspicuously mucronulate.

VITI LEVU: Tholo West: Mbuyombuyo, near Namboutini, *Tabualewa 15597* (A) (tree 10 m. high, in forest); Serua: Thulanuku, vicinity of Ngaloa, alt. 30 m., *Degener 15118* (A) (tree 4–5 m. high, in forest; flowers white); Namosi: Naitarandamu Mt., alt. 1000 m., *Gillespie 3344* (Bish, UC); Rewa: Vicinity of Suva Bay, alt. near sea-level, *Parks 20030* (Bish, UC) (tree 5 m. high, in dense bush on edge of swamp; fruit green), *Bryan 381* (A, Bish) (tree 5–6 m. high; fruit light green to white), *Meebold 16440* (Bish); Naitasiri: Vicinity of Nasinu, alt. 150 m., *Gillespie 3521* (Bish, UC), *3534* (Bish, UC); near Tamavua, alt. 150 m., *Gillespie 2195* (Bish, UC); Waindina River basin, alt. 50 m., *MacDaniels 1037* (Bish) (tree 15 m. high, in rain-forest). OVALAU: *U. S. Expl. Exped.* (GH, NY, US, TYPE); *Seemann 305* (GH, type coll. of *C. Seemanni* and source of the name *Gaertnera barbata*); mountains south of Levuka, alt. 350 m., *Gillespie 4537* (Bish, NY, UC) (fruit white); near summit of main range west of Levuka, alt. 500 m., *Gillespie 4426* (Bish, UC). KANDAVU: Hills above Namalata and Ngaloa Bays, alt. 200–400 m., *Smith 200* (Bish, GH, NY, US, UC) (tree or shrub 5 m. high, in forest; fruit white). VANUA LEVU: Mbua: Lower Wainunu River Valley, alt. 0–200 m., *Smith 1726* (Bish, GH, NY, US, UC) (tree 4–10 m. high, in thin forest; corolla pale yellow; fruit white; native name: *mbulei*); Thakaundrove: Eastern drainage of Yanawai River, alt. 120 m., *Degener & Ordonez 14082* (A) (small tree, in forest; fruit white); Vatunivuamonde Mt., Savu Savu Bay region, alt. 300 m., *Degener & Ordonez 14024* (A) (small tree, in dense forest); southern slope of Mt. Mariko, alt. 400–600 m., *Smith 408* (Bish, NY, US) (shrub 3 m. high; flowers white; native name: *theketheke*).

As indicated by the above citations, this species has a wide range throughout Fiji at low elevations; its occurrence above 500 meters is indicated only by *Gillespie 3344* and must be unusual. That the type collection was obtained on Ovalau is evident from the following notes of Pickering (Geogr. Distr. of Animals and Plants, pt. 2: 358. 1876): "Gen. incert.; (Couthovia of Gray?, No. 1). A tree, forty feet high; leaves opposite, 4 inches by 2½, entire, sheathing at base; terminal corymbs; calyx minute, 5-fid; drupe elongate, contracted or stipitate at base, apiculate with the style. Ovolau." Seemann (Fl. Vit. 166. 1866) remarks that *C. Seemanni* ". . . inhabits the virgin forests of Ovalau, and has a light green foliage, and spreading, not tapering, mode of branching."

3. **Couthovia alata** sp. nov.

Frutex vel arbor corolla intus barbata excepta glabra, ramulis crassis fuscis subteretibus vel apicem versus longitudinaliter sulcatis, internodiis junioribus 1–3 cm. longis; stipulis interpetiolaribus siccitate coriaceis, apice late obtusis, inter sese et cum petiolis connatis et cupulam 5–10 mm. altam formantibus, cupula petiolorum alis conspicuis transverse ornata; petiolis validis brevibus conspicue alatis, alis 1–3 mm. latis cum eis petioli oppositi confluentibus; laminis in sicco coriaceis et plerumque viridi-olivaceis obovato-oblongis, (11–) 14–24 cm. longis, (4–) 5–12 (–16) cm. latis, basi gradatim angustatis vel subobtusis, apice obtusis, margine revolutis, costa valida utrinque prominente, nervis secundariis utrinsecus 6–10 adscendentibus leviter curvatis utrinque manifeste elevatis, rete venularum immerso vel utrinque paullo prominulo; floribus in apice ramulorum in corymbos (cymosos, cymis 3–5-plo divisis) dispositis, pedunculo primario crasso ad 3 cm. longo saepe subnullo, pedunculis secundariis 2–4 ad 7 cm. longis rectis, cymae ramulis primariis 8–30 mm. longis, pedicellis subnullis, bracteis deltoideis circiter 1 mm. longis ciliolatis; calyce papyraceo minute luteo-glanduloso cupuliformi fere ad basim 5-lobato, lobis imbricatis orbiculari-oblongis, circiter 1.5 mm. longis et 2 mm. latis, apice rotundatis, margine ciliolatis; corolla subcarnosa obscure luteo-glandulosa circiter 5 mm. longa, lobis deltoideo-oblongis, circiter 2 mm. longis et 1.5 mm. latis, apice acutis et saepe leviter incrassatis, tubo circiter 2.5 mm. diametro apice pilis rectis circiter 1.2 mm. longis barbato cetera glabro; staminibus 5 tubo insertis, filamentis gracilibus circiter 1 mm. longis, antheris oblongis glabris circiter 1.5 mm. longis; ovario ellipsoideo sub anthesi glabro, stylo inconspicuo circiter 1 mm. longo, stigmate minute subcapitato; fructibus anguste obovoideis clavatis, 15–25 mm. longis, 6–10 mm. diametro, paullo infra medium abrupte contractis, apice subacutis et mucronulatis.

Viti Levu: *Parks 20869* (Bish, type, UC), May–July, 1927; Rewa: Vicinity of Suva Bay, near sea-level, *Setchell & Parks 15160* (UC) (shrub 4 m. high, in dense forest), *Meebold 17012* (Bish); Naitasiri: Vicinity of Tamavua, alt. 150 m., *Gillespie 2095* (Bish), *2433* (Bish, NY, UC); Tamavua-Sawani road, alt. 200 m., *Setchell & Parks 15086* (UC) (tree, in rain-forest).

From the available material, this species appears to be limited to the lowland forest of southeastern Viti Levu; the only good flowering specimen, designated as the type, is unfortunately without detailed data, but it doubtless comes from the same region. The cited specimens have been referred to *C. Seemanni* and *C. corynocarpa*. They agree with *C. corynocarpa* in characters of the inflorescence and fruit, but they very obviously differ in having the short petioles conspicuously winged, the wings confluent with those of the opposite petiole and forming a transverse wing across the stipule-sheath. Furthermore, the leaf-blades are proportionately narrower, stiffer, and more noticeably revolute at margins, while the secondary nerves are more definitely ascending.

4. **Couthovia macroloba** sp. nov.

Frutex 5 m. altus corolla intus barbata excepta glaber, ramulis crassis stramineis subteretibus vel apicem versus leviter angulatis, internodiis junioribus 2–4 cm. longis; stipulis interpetiolaribus coriaceis, apice truncatis vel inconspicue rotundatis, inter sese et cum petiolis connatis et cupulam 8–11 mm. altam formantibus, demum forsan longitudinaliter fissis; petiolis liberis subnullis; laminis chartaceis obovato-ellipticis, 12–20 cm. longis, (5–) 7–11 cm. latis, basi gradatim angustatis, apice obtusis vel obtuse cuspidatis, utrinque in sicco viridi-fuscis, costa valida supra subplana subtus prominente, nervis secundariis 6–8 subrectis adscendentibus supra subplanis subtus conspicue elevatis, rete venularum laxe reticulato immerso vel supra insculpto et subtus leviter prominulo; floribus in apice ramulorum in corymbos 2–4 (cymosos, cymis 3- vel 4-plo divisis) dispositis, pedunculo pri-

mario crasso brevi, pedunculis secundariis 4–6 cm. longis, cymae ramulis primariis gracilibus 1–4 cm. longis, pedicellis subnullis, bracteis minutis deltoideis circiter 0.5 mm. longis; calyce papyraceo cupuliformi profunde 5-lobato, lobis imbricatis orbiculari-oblongis, 1.5–2 mm. longis, 2–2.5 mm. latis, apice rotundatis vel obtusis, margine ciliolatis; corolla distaliter crasse carnosa 6.5–7 mm. longa, lobis oblongis, 3–4 mm. longis, 1.5–2 mm. latis, apice subacutis, tubo 3–3.5 mm. diametro apice pilis rectis 1.5–2 mm. longis dense barbato cetera glabro; staminibus 5 tubo insertis, filamentis gracilibus 1–1.5 mm. longis, antheris oblongis 1.8–2 mm. longis glabris apice mucronulatis; ovario ellipsoideo glabro sparse luteo-glanduloso, stylo circiter 1 mm. longo, stigmate minute capitato; fructibus obovoideis clavatis, 30–40 mm. longis, 10–13 mm. diametro, basim versus gradatim angustatis, apice obtusis et mucronulatis.

TAVEUNI: Borders of lake east of Somosomo, alt. 700–900 m., *Smith 917* (Bish, GH, NY, TYPE, UC, US), Jan. 8, 1934 (shrub 5 m. high, in dense forest; corolla-lobes white; anthers yellow; fruit white).

This upland species is related to *C. corynocarpa,* differing in its lack of a free petiole, its proportionately narrower and more obovate leaf-blades, its ascending secondary nerves, and its larger flowers, particularly as regards the corolla-lobes and anthers. Floral proportions in *Couthovia* appear to be quite consistent for each species, and when the corollas of *C. macroloba* and *C. corynocarpa* are compared side by side the differences are very noticeable. Duplicates of the type are deposited in several European herbaria.

5. **Couthovia macrocarpa** sp. nov.

*Couthovia corynocarpa* sensu A. Gray in Proc. Am. Acad. **5:** 320, quoad *Seemann 303.* 1862; A. Gray in Bonplandia **10:** 37. 1862; Seem. Fl. Vit. 165. *pl. 32.* 1866; non A. Gray, 1859.

*Gaertnera pyramidalis* Seem. ex A. Gray in Bonplandia **10:** 37, nomen. 1862.

Arbor ad 12 m. alta corolla intus pilosa excepta glabra, ramulis crassis fuscis juventute saepe conspicue quadrangulatis demum subteretibus inconspicue lenticellatis, internodiis junioribus plerumque 1.5–3 cm. longis; stipulis interpetiolaribus coriaceis, apice truncatis vel rotundatis, inter sese et cum petiolis connatis et cupulam 5–10 mm. altam formantibus, demum longitudinaliter fissis et caducis; petiolis crassis leviter canaliculatis 5–15 (–25) mm. longis (supra stipulas); laminis chartaceis siccitate viridi-fuscis late ellipticis, 9–15 (–20) cm. longis, 6–14 (–20) cm. latis, basi obtusis vel raro subcordatis et in petiolum decurrentibus, apice rotundatis vel late obtusis, margine planis vel inconspicue recurvatis, costa valida supra paullo elevata et saepe canaliculata subtus prominente, nervis secundariis utrinsecus 6–9 patentibus utrinque leviter elevatis, rete venularum laxe reticulato immerso vel interdum utrinque prominulo; floribus in apice ramulorum in corymbos saepe solitarios (cymosos, cymis 3- vel 4-plo divisis) dispositis, pedunculo primario crasso brevi ad 15 mm. longo, pedunculis secundariis 2–4 cm. longis, cymae ramulis primariis 7–20 mm. longis, pedicellis saepe 1–3 mm. longis bracteas deltoideas circiter 0.7 mm. longas inconspicuas gerentibus; calyce papyraceo cupuliformi profunde 5-lobato, lobis saepe subcarnosis anguste imbricatis ovato-oblongis, 1.8–2.5 mm. longis et latis, margine ciliolatis; corolla distaliter carnosa in alabastro angulata 6–6.5 mm. longa, lobis oblongo-deltoideis, circiter 4 mm. longis, 1.5–2 mm. latis, apice subacutis et saepe leviter incrassatis, tubo 2.5–3 mm. diametro apice pilis 0.5–0.7 mm. longis tomentello-barbato etiam intus pilis similibus laxis pallido-tomentello; staminibus 5 tubo insertis, filamentis gracilibus circiter 1 mm. longis, antheris crassis oblongis 1.8–2 mm. longis glabris apice obtusis; ovario ellipsoideo glabro, stylo gracili 1.5–2.5 mm. longo, stigmate capitato; fructibus maturis sublignosis elliptico-obovoideis plerumque conspicue complanatis, 30–43 mm. longis, 18–28 mm. latis, 10–18 mm. crassis, basi gradatim angustatis vel obtusis, apice rotundatis et mucronulatis.

VITI LEVU: Namosi: Vicinity of Namuamua, alt. 300 m., *Gillespie 2951* (Bish, TYPE, UC), Sept. 22, 1927 (flowers faintly fragrant, the corolla greenish white, the anthers pale yellow; fruit hard, dull creamy white; native name: *mboa*); vicinity of Namosi, alt. 400 m., *Gillespie 2590* (Bish, UC) (bushy-topped tree 12 m. high, near stream; native names: *mbo, mboloa*); Namosi Valley, *Seemann 303* (source of the name *Gaertnera pyramidalis*, GH) (native name: *mboloa;* fruit eaten by pigeons); Namosi or Naitasiri: Upper Waindina River, alt. 65 m., *MacDaniels 1038* (Bish) (tree 10 m. high, in rain-forest; fruit white; native name: *mbola*). WITHOUT DEFINITE LOCALITY: *Horne 589* (GH).

Of the cited specimens, the best flowers are present on the type collection; younger and less satisfactory flowers accompany *Gillespie 2590*, *Seemann 303*, and *Horne 589*. All of the flowers dissected show the characteristic lax tangled tomentum within the tube. The type collection and *MacDaniels 1038* bear good mature fruits, while *Seemann 303* has a fruit similar to that illustrated in Seem. Fl. Vit. *pl. 32*. 1866. While this fruit appears to be not fully mature, it shows the characteristic flattening and woody texture. The limited distribution of this species is noteworthy, as is also the fact that its local names have not been referred to *C. corynocarpa* or other species, as far as can be ascertained from collectors' notes. Concerning the habit of his no. *303*, Seemann (Fl. Vit. 166. 1866) remarks that the species (which he took for *C. corynocarpa*) forms ". . . pyramidal trees, with dark-green foliage . . . , and they constitute a peculiar feature in the landscape of the Namosi Valley of Viti Levu; moreover they grow quite in the open country." Whether or not the habits of *C. macrocarpa* and the true *C. corynocarpa* consistently differ must be left for future observers to ascertain.

Upon receiving Seemann's collections of *Couthovia*, Gray (in Proc. Am. Acad. **5**: 320. 1862) modified his concept to point out that he observed indications of dimorphism, or incipient difference in sex, in the flowers examined. These differences pertained to the greater or lesser development of the pubescence of the corolla-throat and the length of the filaments and style. In the numerous flowers which I have examined I have found no such noteworthy variations, the characters appearing very constant; therefore I believe that Gray's conclusions were based upon inadequate material.

6. **Couthovia pachyantha** sp. nov.

Arbor ad 8 m. alta corolla intus strigosa excepta glabra, ramulis crassis fuscis juventute plerumque complanato-quadrangulatis demum subteretibus, internodiis junioribus 1.5–3 cm. longis; stipulis interpetiolaribus coriaceis, apice truncatis vel rotundatis, inter sese et cum petiolis connatis et cupulam 5–13 mm. altam formantibus, mox caducis; petiolis crassis 5–20 mm. longis (supra stipulas) complanatis margine angulatis; laminis chartaceis vel subcoriaceis siccitate viridifuscis late ellipticis, 9–20 cm. longis, 5–18 cm. latis, basi obtusis saepe subcordatis et in petiolum decurrentibus, apice rotundatis, margine planis vel inconspicue recurvatis, costa valida supra subplana vel leviter elevata subtus prominente, nervis secundariis utrinsecus 5–10 patentibus utrinque leviter elevatis, rete venularum laxe reticulato plerumque utrinque prominulo; floribus in apice ramulorum saepe brevium et defoliatorum in corymbos plerumque solitarios (cymosos, cymis 2- vel 3-plo divisis) dispositis, pedunculo crasso 8–16 mm. longo, cymae ramis primariis 10–20 mm. longis saepe complanatis et transverse rugosis, pedicellis subnullis, bracteis subcarnosis late ovatis circiter 1 mm. longis; calyce tenuiter carnoso cupuliformi profunde 5-lobato, lobis imbricatis orbiculari-ovatis, 2.5–3 mm. longis, 3–4 mm. latis, apice rotundatis, margine ciliolatis; corolla crasse carnosa 6–7 mm. longa, lobis oblongo-deltoideis, 4–4.5 mm. longis, 2.5–3 mm. latis, apice subacutis et saepe incrassatis, tubo 4–5 mm. diametro apice pilis rectis circiter 1.3 mm. longis strigoso-barbato etiam intus pilis similibus strigoso; staminibus 5 tubo insertis, filamentis gracilibus 1.5–2 mm. longis, antheris crassis oblongis circiter

2 mm. longis glabris apice obtusis; ovario ovoideo glabro, stylo crasso 2–2.5 mm. longo, stigmate capitato; fructibus maturis sublignosis fibrosis elliptico-obovoideis subcomplanatis, 25–40 mm. longis, 20–28 mm. latis, 12–20 mm. crassis, basi gradatim angustatis vel saepe rotundatis, apice rotundatis et mucronulatis.

VANUA LEVU: Thakaundrove: Between Valanga and Valethi, Savu Savu Bay region, alt. near sea-level, *Degener & Ordonez 14125* (A, TYPE), Jan. 10, 1941 (tree 8 m. high, in sunny jungle; fruit white).

In foliage and fruit this species is scarcely distinguishable from the preceding, but I believe that the large flowers, with thick-carnose corollas and a different type of corolla-pubescence, amply characterize it. Additional collections of both species are desirable. It is noteworthy that only the mature fruits of *C. pachyantha* and *C. macrocarpa* have the characteristic shape and texture; the younger fruits are obovoid and slightly asymmetrical, although not as conspicuously clavate as those of the first four species of this treatment.

## APOCYNACEAE

**Catharanthus roseus** (L.) G. Don, Gen. Syst. **4:** 95. 1838.

*Vinca rosea* L. Syst. ed. 10. 944. 1759.

*Lochnera rosea* Reichenb. Consp. 134. 1828; Safford in Contr. U. S. Nat. Herb. **9:** 310. 1905; Christoph. in Bishop Mus. Bull. **128:** 180. 1935; non *Lochneria* Scop. (1777).

*Ammocallis rosea* Small, Fl. Southeast. U. S. 936. 1903.

VANUA LEVU: Thakaundrove: Waina, Maravu, near Salt Lake, *Degener & Ordonez 14188* (A) (low shrub, naturalized in coconut plantation). KORO: Eastern slope of main ridge, alt. 100 m., *Smith 1029* (NY) (subligneous herb to 1 m. high, a weed in clearings).

This widespread plant is probably becoming commonly naturalized in Fiji; it has apparently not previously been reported from the group. It has been reported from several other Pacific groups, generally under the name *Lochnera rosea*. However, *Lochnera* Reichenb. (1828) must be considered a later homonym of *Lochneria* Scop. (Introd. 271. 1777); even though no binomial has ever been used in connection with Scopoli's genus, this is properly published and is presumably named after the same individual as *Lochnera* Reichenb.

**Alyxia linearifolia** sp. nov.

Frutex scandens multiramosus ubique partibus florum exceptis glaber, ramulis gracilibus fusco-cinereis juventute quadrangulatis demum subteretibus, internodiis apicem ramulorum versus 2–5 mm. longis; foliis congestis plerumque quaternatis, petiolis minutis ad 1 mm. longis, laminis chartaceis in sicco viridibus oblongo-linearibus, 2–4.5 cm. longis, 1.5–2 mm. latis, basi acutis, apice obtusis, marginibus parallelis integris et leviter revolutis, costa supra immersa vel leviter impressa subtus conspicue elevata, nervis lateralibus brevibus immersis; inflorescentiis axillaribus cymosis (1–) 4–6-floris, pedunculo 3–8 mm. longo gracili leviter angulato, bracteis subacutis anguste oblongis 0.5–0.7 mm. longis, pedicellis gracilibus leviter angulatis 1–3 mm. longis, bracteolis nullis; calyce sub anthesi 1–1.2 mm. longo, lobis erectis membranaceis subacutis oblongo-deltoideis, circiter 0.7 mm. longis et 0.5 mm. latis, margine ciliolatis; corolla submembranacea, tubo urceolato-cylindrico, 3–3.5 mm. longo, paullo supra medium circiter 1.5 mm. diametro, basim et apicem versus contracto, intus distaliter pallide villoso, lobis imbricatis orbiculari-ovatis circiter 2 mm. diametro, apice rotundatis; staminibus circiter 1 mm. infra apicem tubi insertis, filamentis glabris anguste ligulatis circiter 0.3 mm. longis, antheris oblongo-deltoideis circiter 0.7 mm. longis, apice acutis, basi leviter cordatis; disco parvo pilis pallidis circiter 0.3 mm. longis setoso; carpellis distinctis glabris ovoideis, stylo gracili 1.4–1.7 mm. longo, stig-

mate parvo capitato, ovulis in quoque carpello 4 vel 5; fructibus plerumque 1 per inflorescentiam, calyce persistente, stipite gracili circiter 2 mm. longo; drupa solitaria ellipsoidea subfalcata, 8–11 mm. longa, 6–7 mm. diametro, stylo incrassato persistente coronata, pericarpio tenui (circiter 0.5 mm. crasso) extus levi vel ruguloso intus siccitate rugoso, semine ellipsoideo circiter 7 mm. longo conspicue rugoso.

Viti Levu: R a: Vatundamu, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15396* (A, type), June 2, 1941 (liana, in patch of arid forest on forehill; corolla white; native name: *vono*).

*Alyxia linearifolia* is characterized by its congested and very narrow leaves, its small flowers, and its long-stipitate fruits with a conspicuous persistent style. It is probably a derivative of *A. stellata* (Forst.) R. & S., but, although that

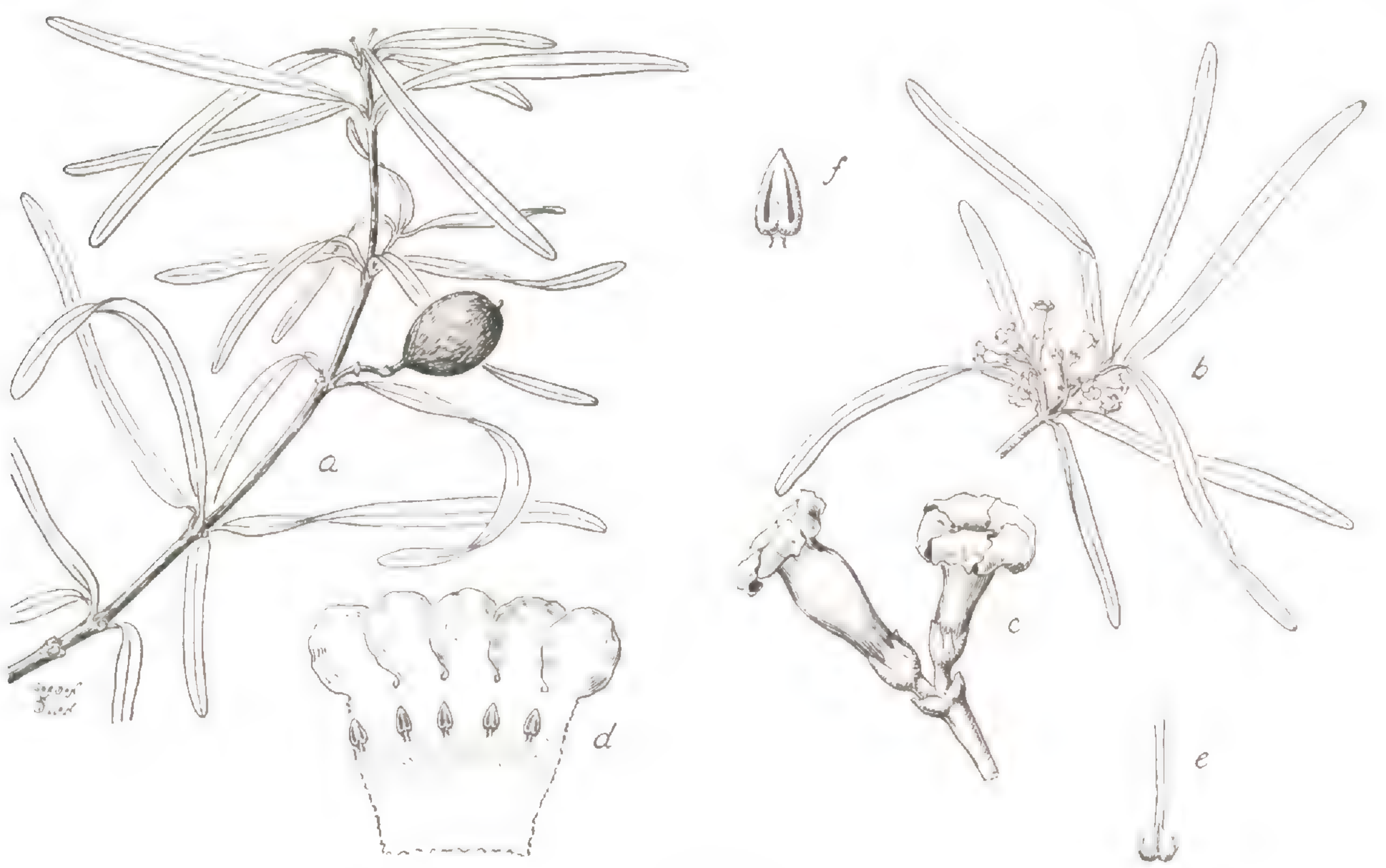


Fig. 5. *Alyxia linearifolia; a.* fruiting branchlet, × 1; *b.* flowering branchlet, × 1; *c.* flowers, × 4; *d.* opened corolla, × 4; *e.* gynaecium, × 4; *f.* stamen, × 10.

species is generally taken to be very variable, the present plant can hardly be forced into it. Possibly some of the specimens which have been referred to *A. stellata* (e.g. *Gillespie 4568* [GH] from Ovalau, with leaf-blades 3–6 mm. broad) will prove to be more closely related to *A. linearifolia*.

## ASCLEPIADACEAE

### Hoya R. Br.

The difficulties connected with this genus arise not so much from the lack of good specific characters as from the fact that early descriptions omitted those points which make accurate identification possible. Floral characters, especially those pertaining to the shape and pubescence of calyx-lobes, size, texture, color, and pubescence of corolla, and shape of corona-lobes, seem to be quite constant, but such characters as the length of peduncles and pedicels and their pubescence are not very reliable. Intangible foliage characters are discernible, and at least the direction of the secondary nerves appears reliable.

Five species are apparent in Fiji, only one of which, *H. australis* R. Br., has a range outside the group. Altitudinal range seems peculiarly without significance in this group, at least in Fiji, as some species are found near the sea and also toward the higher elevations in the forest. Only *H. megalantha* Turrill seems to be restricted to high elevations. As earlier descriptions are often based on inadequate material, I here redescribe four species and add a description of a fifth which appears to be new.

### Key to the Fijian species

Corolla 25–45 mm. in diameter, rich pink or purple, the lobes 10–14 mm. broad, the sinuses obtuse or flattened; lobes of corona 4.5–6 mm. long, shallowly concave above; occurring at elevations of 700 m. or higher .....1. *H. megalantha.*

Corolla 11–20 mm. in diameter, the lobes 4–8 mm. broad; lobes of corona 2.5–5 mm. long.

Lobes of corona 2.5–3.5 mm. long, concave above, inconspicuously bicarinate beneath; calyx-lobes 1.5–3 mm. long, dorsally strigillose or conspicuously puberulent; corolla submembranous, white with colored center, minutely puberulent within, the sinuses acute; leaf-blades usually broadly elliptic, subcordate or rounded at base .....2. *H. australis.*

Lobes of corona 3–5 mm. long, thick, flattened above, rounded beneath; corolla conspicuously puberulent within.

Calyx-lobes deltoid-lanceolate, 3–3.5 mm. long, dorsally conspicuously strigillose; corolla subcarnose, white, the sinuses acute .....3. *H. intermedia.*

Calyx-lobes deltoid or ovate-deltoid, inconspicuous, 0.7–1.7 mm. long, glabrous except for the ciliolate margin.

Corolla subcarnose, purplish or reddish, the sinuses obtuse; secondary nerves 5–7 per side, spreading .....4. *H. vitiensis.*

Corolla submembranous, yellow, the sinuses acute; secondary nerves 3 or 4 per side, ascending, oriented from costa toward base .....5. *H. diptera.*

1. **Hoya megalantha** Turrill in Jour. Linn. Soc. Bot. **43**: 33. 1915.

Vine with slender terete glabrous or obscurely puberulent branchlets; petioles slender, rugulose, 10–16 mm. long; leaf-blades subcoriaceous to papyraceous, elliptic-ovate, 4–10 cm. long, 1.8–4 cm. broad, rounded or obtuse at base, acuminate or acute at apex, pinnate-nerved, the costa slightly impressed above, subprominent beneath, the secondary nerves 4 or 5 per side, inconspicuous, spreading, anastomosing toward margins, slightly impressed or prominulous above, prominulous beneath, the veinlet-reticulation immersed or prominulous on both surfaces; inflorescences axillary, umbellate, glabrous throughout except corolla, the peduncle slender, 25–33 mm. long, swollen and ellipsoid-capitulate at apex, the bracts minute, scariose-margined; flowers 5–20 per inflorescence, the pedicels slender, 28–35 mm. long; calyx-lobes membranous, ovate-deltoid, 1.5–2.5 mm. long, 1.3–1.8 mm. broad, obtuse at apex, glabrous except at the sometimes ciliolate margin; corolla subcarnose, rotate or broadly cyathiform, copiously but faintly reticulate-veined, rich pink or deep purple, 25–45 mm. in diameter, very minutely and densely papillose-puberulent within, the lobes broadly deltoid, 7–13 mm. long, 10–14 mm. broad, acute at apex, the sinuses obtuse or flattened; lobes of corona thick, oblong, 4.5–6 mm. long, 2–3.5 mm. broad, obtuse at apex, cuspidate or acuminate at base, shallowly concave above, rounded and deeply sulcate beneath; pollinia 0.8–1.2 mm. long; carpels glabrous.

Vanua Levu: Mbua: Navotuvotu, summit of Mt. Seatura, alt. 700–830 m., *Smith 1649* (Bish, NY) (vine, in crest thickets; corolla rich pink). Taveuni: Borders of lake east of Somosomo, alt. 700–900 m., *Smith 863* (Bish, NY) (vine, in dense forest; sepals purple; corolla rich pink; native name: *ndraumbimbi*); trail above Somosomo, alt. 750 m., *Gillespie 4815* (Bish).

The species was originally described from specimens collected by im Thurn on Mt. Victoria, Tholo North, Viti Levu, and Mt. Mbuke Levu, Kandavu. Al-

though I have not seen these, the cited material is referred to the species with confidence, agreeing precisely with the earlier description. It is noteworthy that *H. megalantha* has thus far been collected only in four widely separated montane areas. Although having no foliage features which distinguish it from such species as *H. vitiensis, H. megalantha* is very distinct on the basis of floral characters mentioned in the key.

2. **Hoya australis** R. Br. ex Traill in Trans. Hort. Soc. **7:** 28. 1827; Gibbs in Jour. Linn. Soc. Bot. **39:** 157. 1909; Turrill in Jour. Linn. Soc. Bot. **43:** 33. 1915.

*Hoya bicarinata* A. Gray in Proc. Am. Acad. **5:** 335. 1862; in Bonplandia **10:** 37. 1862; Seem. Fl. Vit. 163. 1866.

*Hoya Billardieri* sensu Seem. ex A. Gray in Bonplandia **10:** 37, as synonym. 1862; non Decaisne.

Vine with terete and glabrous or sparingly puberulent branchlets; petioles rugulose, puberulent or glabrous, 6–22 mm. long; leaf-blades chartaceous or subcarnose, glabrous, broadly elliptic or oblong or suborbicular, (3–) 5–13 cm. long, 3–8 cm. broad, subcordate or rounded at base, short-acuminate or cuspidate at apex, pinnate-nerved, the costa nearly plane or slightly canaliculate above, subprominent beneath, the secondary nerves 4–6 per side, spreading, anastomosing toward margins, prominulous on both surfaces, the veinlet-reticulation prominulous on both surfaces or immersed; inflorescences axillary, umbellate, the peduncle stout, 4–30 mm. long, glabrous or puberulent, ellipsoid-capitulate at apex, the bracts inconspicuous; flowers 20–35 per umbel at anthesis, the pedicels slender, puberulent, 12–40 mm. long; calyx-lobes oblong-deltoid or lanceolate-oblong, 1.5–3 mm. long, 0.8–2 mm. broad, subacute at apex, dorsally strigillose or conspicuously puberulent; corolla submembranous, 13–17 mm. in diameter, white, purplish or reddish at base within, densely but minutely puberulent within, the lobes deltoid, 6–7 mm. long, 4–5.5 mm. broad, the sinuses acute; lobes of corona ovoid, 2.5–3.5 mm. long, 1.8–2 mm. broad, obtuse at apex, acuminate at base, concave above, inconspicuously bicarinate beneath; pollinia 0.6–0.8 mm. long; carpels usually pale-puberulent, sometimes apparently glabrous; fruits linear, about 14 cm. long and 7 mm. broad, striate and usually puberulent at maturity.

Waya, Yasawa Group: Nangua, alt. 330–460 m., *St. John 18100* (A, Bish) (vine on trees at edge of cliff; corolla white; native name: *nambetiambete*), *St. John 18164* (A, Bish) (vine over bushes, in woods; flowers fragrant, the corolla white with purplish center). Viti Levu: Tholo North: Slopes of Mt. Victoria, alt. 1200 m., *Gillespie 4096.1* (Bish); Namosi: Wooded hills east of Namosi, alt. 475 m., *Gillespie 2523* (Bish, NY, UC); slopes of Mt. Voma, alt. 500 m., *Gillespie 2494* (Bish) (native name: *wa tambua*). Kandavu: Namalata Isthmus region, near sea-level, *Smith 4* (Bish, NY) (vine, on edge of mangrove swamp; corolla white; native name: *mbitimbiti*). Taveuni: Vicinity of Waiyevo, alt. 600 m., *Gillespie 4747* (Bish) (in woods above coconut plantations). Vanua Mbalavu: Southern limestone section, near sea-level, *Smith 1460* (Bish, NY) (vine, on sea-cliff; corolla white). Sovu, near Vanua Mbalavu: *Bryan 590* (Bish) (vine, climbing over rocks and trees in forest; flowers very fragrant; corolla white and deep red, alt. 5–60 m.). Fulanga: *Smith 1214* (Bish, GH, NY, UC, US) (vine, on limestone cliff in lagoon; corolla white, rich purple at base; corona white; native name: *mbitambita*). Without definite locality: *Seemann 319* (GH); *U. S. Expl. Exped.* (US).

As represented by the cited specimens, the present species is very coherent, being readily distinguished by its elongate strigillose calyx-lobes, its concave corona-lobes, and its thin corollas which are only minutely puberulent within. Among Fijian species it is further distinguished by its comparatively broad leaf-blades which are usually subcordate at base. The above description is taken only from the Fijian specimens and may require amplification when the species as a whole is considered.

*Hoya pilosa* Seem. (ex A. Gray in Bonplandia **10**: 37, nomen. 1862; Seem. Fl. Vit. 163, nomen. 1866; Britten in Jour. Bot. **36**: 417, 418, nomen. 1898), which has never been adequately described, is founded on *Seemann 321,* a sterile duplicate of which is at GH. It has been referred to *H. australis* (or *H. bicarinata*), but its leaf-blades are pilose beneath and I am dubious of its place here. In shape and texture of leaf-blades it suggests the following new species, but because of its pubescence it cannot definitely be placed there.

In referring the cited Fijian specimens to *H. australis,* I am following the majority of authors who have worked on this group. Bentham (Fl. Austral. **4**: 346. 1868) apparently had no doubt that *H. bicarinata* and *H. australis* were synonyms, and his description fits the Pacific specimens fairly well. Britten (in Jour. Bot. **36**: 414. 1898) also places *H. bicarinata* in synonymy, remarking that *Asclepias volubilis* Forst. (Fl. Ins. Austr. Prodr. 21, excl. syn. 1786), from the New Hebrides, is also the same species. This position is followed by Setchell (in Carn. Inst. Publ. **341**: 57. 1924) and several other authors and is generally accepted in herbaria.

Christophersen (in Bishop Mus. Bull. **128**: 188. 1935) expresses the opinion that *H. bicarinata* may be upheld for the Samoan specimens, at least for the time. Basing his concept of *H. australis* upon Bentham's description, Christophersen points out several respects in which the Samoan material differs; these characters concern the degree of pubescence of the young stem, the proportions of the peduncle and the pedicels and their pubescence, and the color and pubescence of the corolla. On the basis of a series of material from Samoa, Tonga, Fiji, and the New Hebrides, I am convinced that characters concerning the length and degree of pubescence of the peduncle and pedicels are of little consequence. Specimens with adequate notes, from these regions, are said to have the corolla purple to red or reddish brown at base within, while the inner surface is densely and obviously puberulent. Australian specimens, on the other hand, are said to have the corolla pink-tinged at the base within, while its inner surface is glabrous, according to Bentham. However, the Australian specimens which are available to me show that the corolla is obscurely but densely puberulent. As to its color, it seems probable that the notes on Bentham's specimens were not very complete, and one may question the validity of this character.

In short, on the basis of Australian and Pacific material now available to me, I find no reliable characters on which the specimens can be divided into *H. australis* on the one hand and *H. bicarinata* on the other. Future observations and monographic work on the genus may modify this opinion.

3. **Hoya intermedia** sp. nov.

Liana, ramis crassis teretibus glabris vel apicem versus pallide puberulis, ramulis lateralibus brevibus 1–5 cm. longis dense foliatis; petiolis crassis (circiter 3 mm. diametro) in sicco valde rugosis 10–20 mm. longis; laminis carnosis oblongis, 8–12 cm. longis, 2–4.5 cm. latis, basi obtusis, apice subacutis, pinnatinerviis, costa supra leviter impressa subtus prominente, nervis secundariis utrinsecus 5–7 adscendentibus saepe immersis interdum utrinque prominulis, rete venularum immerso interdum utrinque prominulo; inflorescentiis axillaribus umbellatis, pedunculo crasso 10–15 mm. longo dense pallido-puberulo glabrescente, apice ellipsoideo-capitulato interdum elongato-verrucoso; bracteis deltoideis circiter 1 mm. longis acutis puberulis; floribus sub anthesi 12–25 per inflorescentiam, pedicellis gracilibus 17–30 mm. longis strigillosis (pilis albidis circiter 0.5 mm. longis); calycis lobis membranaceis deltoideo-lanceolatis, 3–3.5 mm. longis, 1.8–2 mm. latis, dorso

conspicue strigillosis; corolla subcarnosa rotata 16–17 mm. diametro intus copiose et conspicue sericeo-puberula, lobis deltoideis 6–7 mm. longis et latis, apice acutis et saepe recurvatis, sinibus acutis; coronae lobis crassis oblongis, 4.5–5 mm. longis, 2–2.5 mm latis, apice obtusis, basi acutis vel cuspidatis, supra complanatis, subtus rotundatis et profunde sulcatis; polliniis circiter 0.7 mm. longis; carpellis glabris.

VANUA LEVU: Thakaundrove: Valethi, Savu Savu Bay region, alt. 10 m., *Smith 399* (Bish, GH, NY, TYPE, UC, US) (vine, in thickets; corolla white; corona pink-tinged; native name: *ndraumbimbi*).

In its elongate strigillose calyx-lobes, *H. intermedia* resembles *H. australis,* while in characters of its corolla and corona it seems more closely related to *H. vitiensis.* The new species is further distinguished from both of its allies by its habit, having short lateral foliaceous branchlets, its stout petioles, proportionately narrower leaf-blades, and larger bracts.

4. **Hoya vitiensis** Turrill in Jour. Linn. Soc. Bot. **43**: 34. 1915.

Vine with slender terete glabrous branchlets; petioles stout, shallowly canaliculate, 5–19 mm. long; leaf-blades carnose or chartaceous, elliptic-ovate or oblong-elliptic, 6–11 cm. long, (1.5–) 3–7 cm. broad, rounded or obtuse or subcordate at base, acuminate or cuspidate at apex, pinnate-nerved, the costa slightly impressed or elevated above, subprominent beneath, the secondary nerves 5–7 per side, spreading, anastomosing toward margins, slightly raised on both surfaces, the veinlet-reticulation prominulous on both surfaces or sometimes immersed; inflorescences axillary, umbellate, glabrous throughout except corolla, the peduncle slender, 30–55 mm. long, ellipsoid-capitulate at apex and occasionally verrucose for the distal 15 mm., the bracts minute; flowers 12–20 per umbel at anthesis, the pedicels slender, 22–40 mm. long; calyx-lobes membranous, inconspicuous, ovate-deltoid, 1–1.7 mm. long, 1.2–1.5 mm. broad, obtuse at apex, glabrous except at the ciliolate margin; corolla subcarnose, 16–20 mm. in diameter, copiously and conspicuously sericeo-puberulent within, the lobes deltoid, 5–7 mm. long, 6–8 mm. broad, often recurved at margin, the sinuses obtuse; lobes of corona thick, oblong, 4–5 mm. long, 1.5–2.7 mm. broad, obtuse at apex, acuminate at base, flattened above, rounded and deeply sulcate beneath; pollinia 0.6–1 mm. long; carpels glabrous; fruits about 3 per mature inflorescence, the calyx persistent, the carpel linear, 16–21 cm. long, 7–9 mm. in diameter, striate when dried, glabrous.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, alt. 750–1000 m., *Parks 20732* (Bish, UC) (vine, on trees in forest; flowers maroon or waxy-purple-white), *Degener 14304* (A) (vine, in forest; corolla pale purplish red, velvety; corona pale claret); Mt. Matomba, near Nandarivatu, alt. 750–900 m., *Degener 14627a* (A) (native name: *wandra;* used for garlands); Namosi: Vicinity of Namosi, alt. 450 m., *Gillespie 2599* (Bish) (native name: *wa tambua ndamundamu*); Mt. Naitarandamu, alt. 900 m., *Gillespie 3095* (Bish); Rewa: Vicinity of Suva, alt. 150 m., *Gillespie 2180* (Bish, UC) (in woods); Naitasiri: Mt. Korombamba, southeastern slopes, alt. 300 m., *Gillespie 2305* (Bish, UC). WITHOUT DEFINITE LOCALITY: *Horne* (GH).

Although I have not seen the type, collected at Nandarivatu by im Thurn, the original description leaves no doubt as to identification of the species. Noteworthy characters are found in the densely pubescent thick corolla, the lobes of which are separated by obtuse sinuses, the inconspicuous calyx-lobes, and the spreading secondary nerves of the leaf-blades. Specimens with adequate notes apparently have the corollas richly colored, a character which contrasts with such species as *H. australis, H. intermedia,* and *H. diptera.*

The identity of *H. Barracki* Horne (A Year in Fiji, 263, nomen. 1881) is dubious, although Baker (in Jour. Linn. Soc. Bot. **20**: 369. 1883) refers it to *H.*

*australis*. If the above-cited Horne specimen at GH represents a duplicate of *H. Barracki,* the name should be referred to *H. vitiensis*.

5. **Hoya diptera** Seem. ex A. Gray in Proc. Am. Acad. **5**: 336, nomen. 1862; A. Gray in Bonplandia **10**: 37, nomen. 1862; Seem. Fl. Vit. 163. 1866; Turrill in Jour. Linn. Soc. Bot. **43**: 33. 1915.

Vine with slender glabrous or distally puberulent branchlets, sometimes the branchlets short, lateral, densely foliaceous; petioles rugulose, 5–15 mm. long, pale puberulent or glabrous; leaf-blades subcarnose, elliptic or ovate-elliptic or narrowly oblong, 3.5–8 cm. long, (1–) 2–3.2 cm. broad, obtuse at base, cuspidate or obtusely short-acuminate at apex, pinnate-nerved, the costa slightly impressed or plane above, subprominent beneath, the secondary nerves 3 or 4 per side, ascending, oriented from costa toward base, prominulous on both surfaces or submersed, the veinlet-reticulation immersed; inflorescences axillary, umbellate, the peduncle 10–45 mm. long, glabrous or obscurely puberulent, ellipsoid-capitulate at apex, sometimes verrucose for the distal 5 mm., the bracts inconspicuous; flowers 5–10 per umbel at anthesis, the pedicels slender, 8–20 mm. long, glabrous or sparsely pale puberulent; calyx-lobes membranous, inconspicuous, deltoid, 0.7–1.1 mm. long and broad, glabrous except at the ciliolate margin; corolla submembranous, 11–16 mm. in diameter, yellow, copiously and conspicuously puberulent within, the lobes deltoid or ovate-deltoid, 4–6 mm. long and broad, often recurved at margin, the sinuses acute; lobes of corona thick, oblong, 3–4.2 mm. long, 1.6–1.8 mm. broad, obtuse at apex, acuminate at base, flattened above, rounded beneath; pollinia 0.5–0.6 mm. long; carpels glabrous.

Viti Levu: Tholo North: Nauwanga, near Nandarivatu, alt. about 750 m., *Degener 14333* (A) (vine, in open forest; corolla yellow, reddish toward center), *Degener 14755* (A) (liana, in forest; corolla yellow); Naitasiri: Vicinity of Nasinu, alt. 150 m., *Gillespie 3556* (Bish, UC) (liana with pendent inflorescences, in woods). Vanua Levu: Thakaundrove: Savuthuru Mt., near Valethi, alt. 90 m., *Degener & Ordonez 13832* (A) (vine, in forest; corolla yellow); Vatunivuamonde Mt., alt. 240 m., *Degener & Ordonez 14014* (A) (vine, in open forest; corolla yellow). Without definite locality: *Seemann 320* (type coll., GH) (Viti Levu and Taveuni); *U. S. Expl. Exped.* (US).

As represented by the cited specimens, this species is characterized by inconspicuous calyx-lobes, a comparatively thin corolla which is yellow and perhaps reddish tinged at base within, and by the ascending secondary nerves of its leaf-blades. The cited type duplicate does not show the flattened subalate peduncles mentioned by Seemann, and I am inclined to believe that this character, apparently the source of the specific name, was due merely to the degree of pressing of the actual type. In foliage the type duplicate is an excellent match for the other cited specimens.

## CONVOLVULACEAE

**Merremia nymphaeifolia** (Bl.) Hall. f. in Versl. 'S Lands Plantent. **1895**: 127. 1896; Reinecke in Bot. Jahrb. **25**: 671. 1898.

Kandavu: Namalata Isthmus region, alt. 0–30 m., *Smith 191* (GH, NY) (vine, in thickets; corolla white).

This species, which Reinecke reports from Samoa, is here first mentioned from Fiji; the determination is by Dr. S. J. van Ooststroom.

**Operculina Turpethum** (L.) S. Manso, Enum. Subst. Braz. 16. 1836; Christoph. in Bishop Mus. Bull. **154**: 39. 1938.

Viti Levu: Ra: Vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15404* (A) (weed in garden and along roadsides, uncommon; native name: *wa ndamundamu*).

This species, mentioned from Samoa by Christophersen, has not previously been reported from Fiji.

**Quamoclit pennata** (Desr.) Boj. Hort. Maurit. 224, as *Q. pinnata*. 1837; Voigt, Hort. Suburb. Calcut. 353. 1845.

VANUA MBALAVU: Central volcanic section, near Lomaloma, alt. 100–200 m., *Smith 1421* (GH, NY) (vine; corolla bright red; weed in clearings).

This tropical American plant, now widely naturalized, has not previously been reported from Fiji. The genus is thus far unreported from the group.

**Quamoclit coccinea** (L.) Moench, var. **hederifolia** (L.) House in Ann. N. Y. Acad. Sci. **18**: 262. 1908.

VITI LEVU: Tholo West: Viro, near Saru, *Tabualewa 15615* (GH).

This widely naturalized plant has apparently not previously been reported from Fiji or nearby groups.

## VERBENACEAE

By H. N. MOLDENKE

**Lantana Camara** L. var. **aculeata** (L.) Moldenke in Torreya **34**: 9. 1934.

*Lantana aculeata* L. Sp. Pl. 627. 1753.

VITI LEVU: Tholo North: Nandala, vicinity of Nandarivatu, alt. about 750 m., *Degener 15026* (A, NY) (shrub about 3 m. high; native name: *tokalau*). VANUA LEVU: Thakaundrove: Hills south of Nakula Valley, alt. 10–30 m., *Smith 341* (NY) (subscandent shrub 1–4 m. high, common; corolla white to pink; fruit black; native name: *waiwai*).

From our records it appears that neither the species nor the variety has previously been recorded from Fiji in taxonomic literature, although the latter is abundantly naturalized there. The Degener collection has the involucral bractlets remarkably large and conspicuous, somewhat approaching those seen in the material now passing as *L. Moritziana* Otto & Dietr. from tropical America.

**Stachytarpheta mutabilis** (Jacq.) Vahl, Enum. **1**: 209. 1804.

VITI LEVU: Nandi: Vicinity of Nandi, *Degener 15327* (A, NY) (common in a large field; flowers red); Tholo North: Vicinity of Nandarivatu, alt. 900 m., *Gillespie 4418* (NY).

The species has not previously been reported from Fiji.

**Stachytarpheta urticaefolia** (Salisb.) Sims in Curtis, Bot. Mag. **43**: *pl. 1848*, as *S. urticifolia*. 1816.

*Cymburus urticaefolius* Salisb. Parad. Lond. *pl. 53*. 1806.

VITI LEVU: Rewa: Suva, *Meebold 8161* (NY), *Degener & Ordonez 13505* (A, NY) (roadside weed, to 1 m. high; corolla dark purplish blue). KANDAVU: Namalata Isthmus region, near sea-level, *Smith 11* (NY) (herb to 1 m. high, a weed in clearing; corolla deep blue; native name: *tumbutumbu*). VANUA LEVU: Thakaundrove: Maravu, near Salt Lake, near sea-level, *Degener & Ordonez 14212* (A, NY) (naturalized in coconut grove; corolla dark blue).

This widespread weed has not previously been reported from Fiji under the above name, having been widely confused with *S. indica* (L.) Vahl and *S. jamaicensis* (L.) Vahl.

**Premna taitensis** Schau. var. **marchionica** F. H. Br. in Bishop Mus. Bull. **130**: 248, as *P. tahitensis* var. *m.* 1935.

VITI LEVU: Ra: Nanukuloa, *Degener & Ordonez 13674* (A); near coast on Viti Levu Bay, *Degener & Ordonez 13693* (A).

These collections are the first of the variety to be recorded from Fiji; it was originally reported from the Marquesas and Tuamotus.

**Premna taitensis** Schau. var. **rimatarensis** F. H. Br. in Bishop Mus. Bull. **130**: 248, as *P. tahitensis* var. *r.* 1935.

VITI LEVU: Lautoka: North of Lomolomo, *Degener & Ordonez 13641* (A, NY) (large tree, in a ravine in small jagged hills); Tholo North: Korovou, east of Tavua, alt. 60–150 m., *Degener 14949* (A, NY) (tree, in isolated dry forested ravine). OVALAU: Near Levuka, alt. 30 m., *Degener & Ordonez 13793* (A, NY) (tree 5 m. high, in shrubby pasture; native name: *rauvula*). VANUA LEVU: Thakaundrove: Maravu, near Salt Lake, *Degener & Ordonez 14183* (A, NY) (tree, in forest; timber used in house-building; native names: *yaro, tavotavo*).

The variety, originally described from the Austral Islands, is here first recorded from Fiji.

**Vitex quinata** (Lour.) F. N. Will. in Bull. Herb. Boiss. II. **5:** 431. 1905.

*Vitex heterophylla* Roxb. Hort. Beng. 46, hyponym. 1814.

VITI LEVU: Tholo North: Nauwanga, vicinity of Nandarivatu, alt. about 750 m., *Degener 14481* (A, NY) (small tree, in forest; native name: *mbo*).

The cited specimen is the first of the species known from Fiji.

**Vitex trifolia** L. var. **bicolor** (Willd.) Moldenke, Known Geogr. Distr. Verb. 79. 1942.

*Vitex bicolor* Willd. Enum. Hort. Berol. 660. 1809.

*Vitex Negundo* L. var. *bicolor* H. J. Lam, Verb. Malay. Arch. 191. 1919.

VITI LEVU: Ra: Shore of Viti Levu Bay, *Degener & Ordonez 13691* (A, NY) (shrub); Serua: Ngaloa, near shore, *Degener & Ordonez 13620* (A, NY) (shrub about 1.5 m. high). MAKONDRONGA: *Degener & Ordonez 13815* (A) (shrub 2 m. high, on coast). KANDAVU: Western end of island, near Cape Washington, *Smith 314* (GH, NY) (spreading tree 4 m. high, on sandy coast; corolla deep blue, paler without; native name: *ndrala*). VANUA LEVU: Thakaundrove: Maravu, near Salt Lake, *Degener & Ordonez 14058* (A, NY) (shrub 1–2 m. high, on strand; corolla blue). FULANGA: *Smith 1200* (NY) (tree 10 m. high, on beach; corolla blue; native name: *ndrala*).

I cannot agree with Dr. Lam that the closest affinity of this plant is with the Indian *V. Negundo* L. It always grows in a habitat similar to that of *V. trifolia* L. and, indeed, often in close association with the typical form of this species (with three leaflets) and the unifoliolate form (*V. trifolia* var. *simplicifolia* Cham.). Its inflorescence characters all point unmistakably to a very close affinity with *V. trifolia,* rather than with *V. Negundo.* The confusion has doubtless arisen from the fact that many Asiatic specimens of *V. trifolia* and its varieties have been identified as *V. Negundo* in herbaria.

**Clerodendrum fragrans** (Vent.) R. Br. var. **pleniflorum** Schau. in DC. Prodr. **11:** 666, as *Clerodendron fragrans β pleniflora.* 1847; Lam, Verb. Malay. Arch. 260, as *Clerodendron flagrans* var. *pleniflora.* 1919.

VITI LEVU: Ra: Nanukuloa, *Degener & Ordonez 13672* (A) (shrub, along roadside).

This appears to be the first record from Fiji of either the species or the variety.

**Clerodendrum speciosissimum** Van Geert ex Morren in Hort. Belg. **3**: *322. pl. 68*, as *Clerodendron s.* 1836; Paxt. in Mag. Bot. **3**: *217, 271.* 1837.

*Clerodendron fallax* Lindl. in Bot. Reg. **30:** 19. 1844.

VITI LEVU: Lautoka: North of Natalau, alt. 30 m., *Degener 14987* (A, NY) (shrub, naturalized in dry rocky forest); Tholo West: Mbelo, near Vatukarasa, alt. 150 m., *Degener 15168* (A) (shrub, sparingly naturalized in pasture among guavas). KANDAVU: Namalata Isthmus region, near sea-level, *Smith 188* (NY) (herb 1 m. high; floral parts bright red; in clearing).

This species has not previously been recorded from Fiji.

## LABIATAE

**Pogostemon Cablin** (Blanco) Benth. in DC. Prodr. **12:** 156. 1848.

VITI LEVU: Tholo West: Vatukarasa, alt. 120–300 m., *Degener 15326* (A) (leaves used to scent coconut oil; native name: *tukilamlam*). VANUA LEVU: Thakaundrove:

Vatunivuamonde Mt., Savu Savu Bay region, alt. about 400 m., *Degener & Ordonez 14018* (A) (sprawling shrub to 1 m. high, in clearing near summit).

*Pogostemon Cablin* appears not to have been previously reported from this part of the Pacific; it is apparently becoming naturalized in Fiji.

## SCROPHULARIACEAE

**Limnophila rugosa** (Roth) Merr. Interpret. Herb. Amb. 466. 1917.

VANUA LEVU: Thakaundrove: Valanga, Savu Savu Bay region, alt. 30 m., *Degener & Ordonez 13910* (GH) (subprostrate, in springy clearing; flowers pale blue).

Although the species has not previously been reported from Fiji under this name, Hemsley (in Rep. Voy. Challenger **1**(3): 243. 1885) implies that *Seemann 352* (cited as *Adenosma triflora* (Roxb.) Nees in Seem. Fl. Vit. 185. 1866) is identical with *Limnophila Roxburghii* G. Don, a synonym of *L. rugosa*.

## GESNERIACEAE

**Cyrtandra tomentosa** sp. nov.

Frutex, ramulis crassis rectis subteretibus apicem versus pilis castaneis multiseptatis ad 4 mm. longis densissime strigoso-tomentosis demum glabrescentibus cinereis striatis; foliis oppositis, petiolis crassis ad 4.5 cm. longis ut ramulis pilosis, laminis papyraceis oblongo-lanceolatis, 15–23 cm. longis, 2.5–5.5 cm. latis, basi gradatim attenuatis et in petiolum decurrentibus, apice angustatis et acuminatis, margine dentibus curvatis callosis 1–4 per centimetrum inconspicue serratis vel basim versus integris, supra minute scrobiculatis et pilis castaneis ad 3 mm. longis multiseptatis basi bulbosis hispidis demum glabrescentibus et scabris, subtus pilis tenuioribus brevioribus ferrugineis densissime et persistenter tomentosis et costa hispidis, costa supra subplana subtus prominente, nervis secundariis utrinsecus 9–12 arcuato-adscendentibus supra subplanis subtus paullo elevatis, rete venularum immerso vel subtus leviter prominulo; inflorescentiis axillaribus cymosis congestis ut videtur 3- vel 4-floris, pedunculo subnullo, bracteis paucis parvis deltoideo-oblongis ad 4 mm. longis setosis; pedicellis 1–5 mm. longis cum calyce dense fulvo-strigoso-tomentellis (pilis multiseptatis 2–4 mm. longis); calyce sub fructu juvenili papyraceo campanulato circiter 10 mm. longo pilis pallidis multiseptatis circiter 4 mm. longis basi intus dense sericeo-strigoso, lobis 5 subaequalibus attenuatis deltoideo-lanceolatis 4–5 mm. longis; disco tenuiter carnoso breviter tubuloso circiter 1 mm. alto integro; gynaecio glabro, ovario ellipsoideo, stylo circiter 6 mm. longo, stigmate capitato circiter 1.5 mm. diametro; fructibus juvenilibus ad 10 mm. longis et 6 mm. latis ellipsoideis apicem versus angustatis, pericarpio ruguloso circiter 0.7 mm. crasso, calyce ut videtur persistente.

VITI LEVU: Tholo North: Nandrau, vicinity of Nandarivatu, alt. about 600 m., *Degener 14889* (A, TYPE), Mar. 26, 1941 (shrub, in forest; native name: *mbeta*).

A member of the Section *Campanulaceae, C. tomentosa* bears a close resemblance in its pubescence to *C. Chippendalei* Horne, but differs in its oblong-lanceolate and much narrower leaf-blades, which are long-attenuate rather than cuneate or obtuse at base, and its somewhat shorter pedicels and calyx, the latter with proportionately longer and narrower lobes.

**Cyrtandra Aloisiana** sp. nov.

Frutex circiter 1 m. altus, ramulis gracilibus juventute pilis multiseptatis 2–4 mm. longis densissime ferrugineo-villosis demum glabris cinereis obscure quadrangularibus; foliis oppositis, petiolis gracilibus 1.5–3 cm. longis leviter canaliculatis ut ramulis villosis glabrescentibus, laminis papyraceis elliptico-oblongis, 10–21 cm. longis, 4–8 cm. latis, basi attenuatis et in petiolum decurrentibus, apice subacutis vel gradatim acuminatis, margine inconspicue serratis (dentibus 1–4 per

centimetrum mucronulatis), supra sparse hispidis (pilis circiter 2 mm. longis basi bulbosis), subtus praecipue costa nervisque longe ferrugineo-pilosis, costa supra subplana vel leviter impressa subtus prominente, nervis secundariis utrinsecus 6–8 adscendentibus supra planis vel insculptis subtus leviter elevatis, venulis subtus prominulis; inflorescentiis cymosis axillaribus, pedunculo 3–6 (sub fructu ad 15) mm. longo pilis ferrugineis patentibus multiseptatis 1.5–2 mm. longis dense villoso; bracteis exterioribus 2 papyraceis lanceolato-ovatis, 15–17 mm. longis, 6–7 mm. latis, longe acuminatis, utrinque ut pedunculo dense villosis, bracteis interioribus pluribus submembranaceis ovatis, 7–8 mm. longis, 4–5 mm. latis, acuminatis, utrinque sericeo-villosis; floribus 4–8 per inflorescentiam congestis, pedicellis gracilibus sub anthesi 5–6 mm. sub fructu ad 12 mm. longis ut pedunculo villosis; calyce submembranaceo 7–9 mm. longo fere ad basim 5-lobato, lobis lanceolatis, 5–7 mm. longis, circiter 2 mm. latis, acuminatis, extus ut bracteis pilosis, intus glabris; corolla membranacea cylindrica, sub anthesi 15–16 mm. longa, circiter 4 mm. diametro, extus glabra vel distaliter sparse pilosa, intus glabra, lobis 5 aequalibus suborbiculari-ovatis circiter 4 mm. diametro rotundatis; staminibus fauce insertis glabris, filamentis filiformibus circiter 2 mm. longis, antheris deltoideo-oblongis, 1.5–2.5 mm. longis, apice mucronulatis, basi cordatis; disco subcarnoso annulari glabro circiter 0.7 mm. alto; gynaecio glabro; ovario ellipsoideo, stylo gracili ad 5 mm. longo, stigmate capitato circiter 2 mm. diametro; fructibus juvenilibus anguste oblongo-ellipsoideis apicem versus angustatis, calyce demum deciduo.

VITI LEVU: Tholo West: Uluvatu, vicinity of Mbelo, near Vatukarasa, *Tabualewa 15619* (A); Serua: Thulanuku, vicinity of Ngaloa, near sea-level, *Degener 15105* (A, TYPE), Apr. 29, 1941 (shrub about 1 m. high, on wet forested slope near ocean; corolla yellowish; stems used medicinally; native name: *makamakandora*).

A species of the Section *Polynesieae, C. Aloisiana* seems most closely related to *C. anthropophagorum* Seem., with which it agrees fairly well in foliage, differing in its more compact and short-pedunculate inflorescence, short pedicels, and essentially glabrous rather than villose corollas. The new species has the pubescence of the young parts and the nerves of the lower surfaces of leaf-blades conspicuously longer.

At Mr. Degener's suggestion, the species is named for Aloisio Tabualewa, a Fijian collector who was of great assistance to him, especially in the Serua region.

## ACANTHACEAE

**Thunbergia grandiflora** Roxb. Hort. Beng. 45. 1814; Fl. Ind. ed. 2. **3**: 34. 1832.

VITI LEVU: Ra: Vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15493* (A) (sparingly persistent on low land).

This native of India, previously unreported from the islands near Fiji, is apparently becoming naturalized.

**Dyschoriste repanda** (A. Gray) comb. nov.

*Chaetacanthus repandus* A. Gray in Proc. Am. Acad. **5**: 349, excl. syn. 1862; Seem. Fl. Vit. 185. 1866.

*Calophanes repandus* Benth. & Hook. f. ex Drake, Ill. Fl. Ins. Mar. Pac. 257. 1892; Gillespie in Bishop Mus. Bull. **91**: *27. f. 30.* 1932.

VITI LEVU: Tholo West: Viro, near Saru, *Tabualewa 15616* (A) (low shrub). OVALAU: *U. S. Expl. Exped.* (GH, TYPE COLL.), *Graeffe* (GH). VANUA LEVU: Thakaundrove: Southern slope of Valanga Range, alt. 200–400 m., *Smith 388* (GH, NY) (shrub 1 m. high, in dense forest; corolla white); between Valanga and Urata, Savu Savu Bay region, near sea-level, *Degener & Ordonez 13861* (A) (shrub 1 m. high, in rocky forest; corolla white). WITHOUT DEFINITE LOCALITY: *Horne 238* (GH).

Although the corolla-lobes are scarcely contorted, the flowers of our species nevertheless agree with those of many other species which fall into Lindau's concept (in E. & P. Nat. Pfl. IV. **3b**: 302. 1895) of *Dyschoriste* Nees. The generic name has not previously been noted in the literature pertaining to Fijian plants.

**Graptophyllum insularum** (A. Gray) comb. nov.

*Eranthemum insularum* A. Gray in Proc. Am. Acad. **5**: 349. 1862; in Bonplandia **10**: 37. 1862; Seem. Fl. Vit. 186. 1866; Drake, Ill. Fl. Ins. Mar. Pac. 257. 1892; Hemsl. in Jour. Linn. Soc. Bot. **30**: 187. 1894.

*Graptophyllum siphonostena* F. v. Muell. Fragm. Phyt. Austr. **6**: 87, nomen. 1868; Hemsl. in Jour. Linn. Soc. Bot. **30**: 187, nomen. 1894; Stapf ex Hemsl. in Jour. Linn. Soc. Bot. **30**: 214. 1894; Lindau in E. & P. Nat. Pfl. IV. **3b**: 327. 1895; Burkill in Jour. Linn. Soc. Bot. **35**: 49. 1901; Gibbs in Jour. Linn. Soc. Bot. **39**: 159. 1909.

VITI LEVU: Lautoka: North of Lomolomo, alt. 60 m., *Degener & Ordonez 13724* (A) (shrub 1 m. high, on shaded ledge; corolla pale purplish pink); north of Natalau, alt. 60 m., *Degener 14999* (A) (shrub to 3 m. high, in dry rocky forest; corolla red); Tholo North: Vicinity of Nandarivatu, alt. 600–900 m., *Degener & Ordonez 13562* (A) (tree 3 m. high, in rain-forest; corolla dark red), *Degener 14823* (A) (tree 4 m. high, in open forest; corolla purplish red), *Degener 14896* (A) (in forest; leaves bronzed beneath); Rewa: Visari R., *Prince* (GH). OVALAU: *Seemann 351*, in part (GH, type coll. of *G. siphonostena*). KANDAVU: Namalata Isthmus region, near sea-level, *Smith 44* (GH, NY) (shrub 8 m. high, in low forest; fruit green). VANUA LEVU: Thakaundrove-Mathuata boundary: Korotini Range, alt. 650–900 m., *Smith 562* (GH, NY) (tree 5 m. high, in dry forest; corolla rich pink); Thakaundrove: Maravu, near Salt Lake, alt. 90 m., *Degener & Ordonez 14202* (A) (scraggly shrub 1 m. high, on forested slope; corolla red). FULANGA: *Smith 1120* (GH, NY) (slender shrub 1 m. high, in forest on limestone formation, alt. 0–80 m.; corolla rich pink). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (GH, TYPE COLL.).

TONGA: "Vavau and Lifuka," *Harvey* (GH).

There seems no doubt that the two synonyms cited above refer to the same concept. Although both Mueller and Stapf, in their discussions of *Graptophyllum siphonostena*, cite the Seemann collection without number, they doubtless had part of his number *351*. Under this number, as Gray noted (in Bonplandia **10**: 37. 1862), Seemann had combined his specimens of the present species and *Eranthemum laxiflorum* [= *Pseuderanthemum laxiflorum* (A. Gray) Hubbard]. That Mueller's name does not refer to the latter species is obvious from Stapf's description and his citation of the Harvey specimen from Tonga. This same Tongan collection was cited in Gray's original description of *Eranthemum insularum*. The species clearly falls into *Graptophyllum* Nees in Lindau's system.

## RUBIACEAE

BY F. R. FOSBERG

### DOLICHOLOBIUM A. Gray

The Fijian species of *Dolicholobium* are not especially well understood and are not separated by very clear distinguishing characters. Four species have been described, of which *D. Macgregori* Horne seems to be the most distinct, but chiefly on the basis of the much greater size of all of its parts. It may, however, have to be associated with *D. latifolium* A. Gray when the latter is better known. *D. latifolium* has apparently not been found since the original collection, and cannot be satisfactorily treated at present. It seems to differ chiefly in leaf-shape from *D. oblongifolium* A. Gray. From this latter species *D. longissimum* Seem. differs principally in the spreading rather than appressed pubescence. These two I would associate as varieties, along with a third variety described to

accommodate much of what has been referred to *D. oblongifolium,* but which differs somewhat from the type. An arrangement of these varieties is given below under *D. oblongifolium,* the oldest name. Varying characters, in addition to those on which the varieties are founded, occur in the length of the fruit and in the pistillate calyx, which in certain specimens is somewhat lobed. These correlate with nothing else and are, at least for the present, disregarded.

**Dolicholobium oblongifolium** A. Gray in Proc. Am. Acad. **4:** 309. 1860.

This species must be considered the type of the genus, since Gray says that flowering specimens of it collected by Milne afforded the materials necessary for characterizing the genus.

**Dolicholobium oblongifolium** var. **oblongifolium** (A. Gray) Fosberg, nom. nov.

*Dolicholobium oblongifolium* A. Gray, l. c. (*s. str.*).

Leaves thin, 12–17 cm. long, obovate-oblanceolate, acuminate at apex, cuneate at base, the midrib, petioles, stipules, inflorescence and fruit loosely appressed- or subappressed-pilose.

VANUA LEVU: Mbua: Sandalwood Bay, *U. S. Expl. Exped.* (US, TYPE). TAVEUNI: *Gillespie 4721* (US, NY).

I have seen three other U. S. Exploring Expedition sheets (1 GH, 2 NY) which are identical with the one cited above, but which are without locality. The National Herbarium sheet is designated as the type, since it has a definite locality and is more complete.

**Dolicholobium oblongifolium** var. **Degeneri** Fosberg, var. nov.

Folia crassa chartacea, basi obtusa, vix strigosa.

Leaves short, obovate or oblong, the apex scarcely acuminate, the base obtuse, the pubescence thin, strigose, the veins 10 or 11 on a side.

VANUA LEVU: Mbua: Navotuvotu, summit of Mt. Seatura, alt. 700–830 m., Apr. 27, 1934, *Smith 1643* (GH, NY, US, TYPE). Other collections, which it seems unnecessary to cite in detail, are as follows: VITI LEVU: *Gillespie 2017, 4225, 2559* (all US), *3618, 4284, 2646, 3618, 3614* (all NY); *Degener 14423, 14747, 14816* (all USNA, A); *Degener & Ordonez 13769* (USNA, A); *Tabualewa 15590* (USNA, A). VANUA LEVU: *Smith 1573, 1871* (both GH, NY, US). KORO: *Smith 1053* (GH, NY, US), approaching var. *oblongifolium.* WITHOUT LOCALITY: *Horne 518, 868* (both GH).

**Dolicholobium oblongifolium** var. **longissimum** (Seem.) Fosberg, comb. nov.

*Dolicholobium longissimum* Seem. in Bonplandia **9:** 256, nomen. 1861; Fl. Vit. 121. *pl. 25.* 1866.

Leaves obovate, slightly acuminate, the veins usually 10 or 11 per side, the pubescence dense, rusty, velutinous-tomentose.

VITI LEVU: *Seemann 215* (GH, TYPE COLL.). VANUA LEVU: Thakaundrove: Mt. Mariko, alt. 600–866 m., *Smith 426* (GH, NY, US).

*Gillespie 3488* (NY), from Vanua Levu, with stipules obovate rather than oblong and with veins 12–14 per side, must also belong here.

## NEONAUCLEA Merr.

**Neonauclea Forsteri** (Seem.) Merr. in Jour. Wash. Acad. **5:** 540. 1915.

*Nauclea Forsteri* Seem. Fl. Vit. 121. 1866.

*Neonauclea vitiensis* Gillespie in Bishop Mus. Bull. **74:** 28. 1930.

VITI LEVU: Tholo North: Near Nandarivatu, *Gillespie 4188* (NY, isotype of *N. vitiensis*); Tholo West: Naruku, vicinity of Mbelo, near Vatukarasa, alt. 120–300 m., *Degener 15232* (USNA, A); Uluvatu, same general locality, *Degener 15312* (USNA, A); Tholo East: Wainimala Valley, south of Matawailevu, *St. John 18375* (Bish).

I can now see no essential difference between *N. vitiensis* and *N. Forsteri.* When I noted the St. John collection as *N. vitiensis* (in Bull. Torrey Club **67:** 419. 1940) I thought that the Fijian plant had thicker and differently shaped leaves, but the cited Degener collections completely break down these differences. The supposed pedicels to which I referred in that publication are merely the persistent axes of the fruits. *N. vitiensis,* when originally published, was not compared with *N. Forsteri,* but *Sarcocephalus pacificus* Rein. was mentioned as congeneric. The latter is now referred to the genus *Sarcopygme.*

### Randia [Houst.] L.

**Randia** [Houst.] L. Sp. Pl. 1192. 1753; Gen. Pl. ed. 5. 74. 1754.

*Pelagodendron* Seem. Fl. Vit. 124. 1866.

*Canthiopsis* Seem. Fl. Vit. 166. 1866.

The two monotypic genera, *Pelagodendron* and *Canthiopsis,* described by Seemann in Flora Vitiensis in Rubiaceae and Loganiaceae respectively, seem to be identical. Examination of an isotype of *Pelagodendron vitiense, Seemann 240* (NY), shows that it belongs to the same species as his *Canthiopsis odorata,* which has long since been transferred to *Randia,* where it certainly belongs. Specimens which have been referred to *Pelagodendron* have somewhat larger leaves, but are otherwise identical with *Randia odorata.* The separation of these into different families by Seemann was apparently due to faulty observation of the ovary and ovules of *Canthiopsis,* as otherwise his descriptions of the two do not differ significantly. His illustration shows an almost superior ovary with one ovule in a cell. Bentham and Hooker, Drake, Gillespie, and A. C. Smith have all agreed in referring *Canthiopsis* to *Randia.* Of these at least Bentham and Hooker and Smith had access to the type. Smith also compared his *no. 1438* with the type of *Pelagodendron vitiense* and noted that it does not differ essentially. The sheet of *Seemann 240* at New York is labelled "Randia? teste Seem.," showing that Seemann was aware that at least fruiting material showed a resemblance to *Randia.* On this sheet there is a condensed inflorescence having the appearance of a "witches' broom," which may have been what Seemann meant in his description by "floribus axillaribus fasciculatis." This looks to me like an abnormal inflorescence.

**Randia vitiensis** (Seem.) Fosberg, comb. nov.

*Pelagodendron vitiense* Seem. Fl. Vit. 124. April 2, 1866.

*Canthiopsis odorata* Seem. Fl. Vit. 166. Oct. 1, 1866.

*Randia odorata* B. & H. ex Drake, Ill. Fl. Ins. Mar. Pac. 191. 1890.

Viti Levu: Serua: Vicinity of Ngaloa, alt. 0–150 m., *Degener 15186* (USNA, A); Naitasiri: Korombamba Mt., *Gillespie 2220* (NY, US); Tamavua woods, *Gillespie 2019* (NY, US). Ovalau: *Seemann 240* (NY, isotype). Vanua Levu: Thakaundrove: Yanawai River region, *Smith 1832* (NY, US), *Degener & Ordonez 14118* (USNA, A). Vanua Mbalavu: Malatta islet, *Smith 1438* (NY).

Since the fascicle in which *Pelagodendron* is published is dated earlier than that in which *Canthiopsis* appeared, the epithet *vitiensis* must take precedence.

### Dorisia Gillespie

**Dorisia flavida** (Seem.) A. C. Sm. in Bishop Mus. Bull. **141:** 140. 1936.

Viti Levu: Tholo North: Nandarivatu, alt. 800–900 m., *Degener & Ordonez 13579* (USNA, A).

This collection extends the range of the species to Viti Levu. It has been previously reported from Rambi and Vanua Levu, where, judging by the number of collections, it must be rather common.

This species shows considerable variation. The Degener specimen is glabrous, has small, ovate to broadly elliptic coriaceous leaves, with the veins close together and prominently reticulate. Smith's specimens from Vanua Levu (nos. *430, 1790, 1932*) have the leaves larger, thinner, elliptic to narrowly obovate, with less prominent veins, and are all perfectly glabrous. Another specimen from Vanua Levu (Mbua: between Mbua and Devoka, *Mrs. H. B. R. Parham III* [A]), with large leaves similar to those of the Smith material, has the under surface of the leaves, the branchlets, the midrib of the stipules, and the inflorescence closely papillate-hirtellous. The fruits of this fragmentary specimen are rather small, but not significantly different. When better material of this plant is available it may well prove to be a distinct species, or at least a variety.

### Timonius DC.

**Timonius affinis** var. **sapotaefolius** (A. Gray) Fosberg, comb. nov.

*Timonius sapotaefolius* A. Gray in Proc. Am. Acad. **4**: 35. 1860.

Differs from *T. affinis* A. Gray only in the less prominent and more numerous secondary veins, and in the more prominent areolation between them.

Without definite locality: *U. S. Expl. Exped.* (US, type, GH).

Two sheets, both sterile, but probably belonging here, from Samoa (Savaii: Tuata, *Reinecke 388* [US]), have the stems more fleshy and the leaves larger than on the type.

The sheet at Washington is designated as the type, as the one at Gray is only a fragment with drawings.

**Timonius Smithii** Fosberg, sp. nov.

Arbor subglabra; folia late elliptica acuta petiolata; stipulae strigosae; cymae masculae graciles dichotomae pauciflorae secundae; fructus solitarius pedunculatus subcompressus, 10-costatus, apice vix retusus tenuiter carnosus, pyrenis 7, rectis, in putamen oblongum connatis.

Tree up to 18 m. tall, essentially glabrous, or the young parts somewhat strigose, the bark of branchlets gray; leaf-blades broadly elliptic, acute or acutish at both ends, up to 14 cm. long and 7 cm. wide, with 5–7 veins on a side; petioles up to 2 cm. long; stipules 3–4 mm. long, ovate-triangular, ventricose, free, strigose, ciliate at margin, persistent on only 1 or 2 nodes from the apex of branchlet; staminate cymes axillary, slender, thinly appressed-tomentulose or puberulent, the peduncle 13–25 mm. long, once dichotomous, the branches 5–10 mm. long, the cyme with 1 terminal flower and 3–5 on each branch, these secund, subsessile, subtended by vestigial bracts; calyx subtruncate or very shallowly lobed, thinly tomentose; corolla densely tomentulose externally, especially below, "whitish," only buds available, the longest of these about 5 mm.; pistillode glabrous, 2 mm. long; pistillate flowers unavailable, probably solitary; fruiting peduncles 1–3.5 cm. long, with a single fruit subtended by two minute bracts; fruit red, thinly carnose, cylindro-ellipsoid, slightly compressed, 1.5–2.5 cm. long, 1.2–1.8 cm. wide, rounded at both ends, slightly retuse at apex around the persistent cup-shaped calyx, this about 1 mm. high and 2 mm. wide, subtruncate to shallowly and irregularly 6-lobed; pyrenes straight, about 7, fused into an oblong, somewhat compressed, shallowly ribbed stone, the ribs about 10, the sclerification in two layers, the outer of firmly packed coherent granules, with a number of more or less open longitudinal cavities, the inner, surrounding the cells, hard and bony, the cells circular in transverse section, arranged in 2 parallel rows.

VITI LEVU: Naitasiri: Suva Pumping Station, alt. 30–80 m., *Degener & Ordonez 13760* (USNA, A) (leaves smaller than type). VANUA LEVU: Thakaundrove: Natewa Bay region, hills west of Korotasere, alt. 100–300 m., *Smith 1930* (GH, NY, US); Mbua: Lower Wainunu River Valley, alt. 0–200 m., *Smith 1724* (GH, NY, US) (leaves smaller and with less veins than type). MOALA: Forest above Maloku, alt. 400 m., Mar. 22, 1934, *Smith 1347* (GH, NY, US, TYPE).

This species is close to the plant known as *Guettarda Kajewskii* Guillaumin of the New Hebrides, which has not been transferred to *Timonius,* but of which a discussion is to be published elsewhere. *T. Smithii* differs in its few-flowered once-dichotomous cymes, and in its fruit, which is fewer-celled and rounded at both ends, with the pyrenes more firmly united.

## MORINDA L.

The Fijian species of *Morinda* have been rather puzzling to me, and, judging from misidentifications in herbaria, also to others. In connection with identification of the Degener collections of this genus I have had occasion to study rather carefully not only what material I could get of the Fijian species of the genus, but of related plants from the Indo-Pacific area. While no treatment for this area is yet attempted, certain observations on the Fijian members may be recorded. The widespread *M. citrifolia,* common in Fiji as well as the whole Indo-Pacific region, is omitted from the discussion.

**Morinda Grayi** Seem. Fl. Vit. 130. 1866.

*Morinda lucida* A. Gray in Proc. Am. Acad. **4:** 41. 1860; not Benth. (1849).

VITI LEVU: Tholo West: Uluvatu, vicinity of Mbelo, near Vatukarasa, alt. 120–300 m., *Degener 15261* (USNA, A); Serua: Vatutavathe, vicinity of Ngaloa, alt. 0–150 m., *Degener 15197* (USNA, A); Thulanuku, vicinity of Ngaloa, alt. 0–150 m., *Degener 15116* (USNA, A). VANUA LEVU: Thakaundrove: Hills south of Nakula Valley, alt. 40 m., *Smith 348* (GH, NY, US); Mbua: Southern portion of Seatovo Range, alt. 100–350 m., *Smith 1521* (GH, NY, US). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (US, TYPE, GH), *Seemann 223* (GH).

This species seems amply distinct and rather uniform. It is a liana most easily recognized by its large, ovate, acuminate, usually curved, glossy leaves, conspicuously pointed buds, and large fruits, about 2 cm. across. It is known from a number of collections from both Vanua Levu and Viti Levu. The type specimens at Washington and at Gray Herbarium are practically identical, and have no locality other than "Feejee Islands." The U. S. National Herbarium sheet contains more ample material and bears the original dissections, and so it is here designated as the type. Since the original material was in fruit only, a description of the flowering heads is presented here.

Heads borne 2 or 3 (rarely 4) at the terminal nodes of short lateral branchlets, on peduncles about 1 cm. long (rarely much longer), the peduncles sometimes shortly united at base, the heads glabrous, 10–20-flowered; buds acute; calyx a fleshy truncate cup; corolla 6–8 mm. long, divided halfway to base into 5 (rarely 4) reflexed lobes, glabrous externally, exceedingly woolly internally, "pale orange" or "white within, yellow without"; anthers linear, just less than 2 mm. long.

**Morinda umbellata** L. Sp. Pl. 176. 1753.

This species is known, in its typical form, from Ceylon, and probably from much of southeastern Asia. In southeastern Asia, the Malayan region, and New Guinea, it breaks up into a number of closely related species or varieties, whose interrelationships have not been well worked out. The problem presented is similar to that of a number of other vast, variable species, whose subdivisions are

mostly too closely related to merit specific rank but have commonly been described as species on the basis of a few scattered specimens. A final disposition of these, in the Indo-Pacific area, must await a great amount of further collecting and field study. Several Pacific forms in this complex, most of which have been considered species in the past, are dealt with below. With the exception of *M. mollis* A. Gray, they are considered to be varieties of *M. umbellata* L., as the differences are rather slight, mostly of degree, and tend to break down when a large series of specimens is examined. I have not seen material of *M. nandarivatensis* Gillespie, but it is of this relationship.

**Morinda umbellata** var. **Forsteri** (Seem.) Fosberg, comb. nov.

*Morinda Forsteri* Seem. Fl. Vit. 129. 1866.

*Morinda myrtifolia* A. Gray in Proc. Am. Acad. **4**: 41. 1860.

This is distinguishable from Asiatic material chiefly by its somewhat thicker, glabrous, less venulose leaves with veins anastomosing somewhat farther from the margins, larger flowers, often glabrous or almost so within, and purple fruits. It is almost indistinguishable from *M. umbellata* var. *glandulosa* (Merr.) Fosberg of Guam, but has somewhat smaller flowers, glabrous, or at least less woolly within. *M. myrtifolia* A. Gray is apparently only a rather narrow-leaved form of this. The corolla-tubes on the sheet of the type collection (*U. S. Expl. Exped.*) at Washington are rather shorter than usual for the variety. I do not think that it is worth recognition, at least until further collections demonstrate some correlation of the differences.

This variety is found from Pitcairn and Henderson Islands as far west as the New Hebrides, and perhaps to New Caledonia. I am transferring the epithet *Forsteri* to *M. umbellata* rather than the earlier *myrtifolia,* as the former is well known and there is no doubt as to its application, while the latter still has a somewhat doubtful status.

**Morinda umbellata** var. **bucidaefolia** (A. Gray) Fosberg, comb. nov.

*Morinda bucidaefolia* A. Gray in Proc. Am. Acad. **4**: 41. 1860.

This plant has been distinguished chiefly by its obovate, usually cuneate, coriaceous, strongly reticulate leaves, and slender, somewhat funnelform corollas. The variety described below is intermediate between this and *M. umbellata* in its vegetative characters and has flowers similar to those of *M. bucidaefolia.* Since in Asiatic material corollas may frequently be found almost as slender as in these plants, and since the slenderness is largely due to a somewhat longer corolla tube, an extremely unstable character in this group, the reduction to varietal status seems justified.

VANUA LEVU: Thakaundrove: Natewa Peninsula, Uluingala, alt. 600–820 m., *Smith 1999* (GH, NY, US); Mbua: Sandalwood Bay, *U. S. Expl. Exped.* (GH, US, TYPE).

I think that the two U. S. Exploring Expedition specimens are without doubt from the same collection, and the Washington specimen, being the more ample, is designated as the type.

**Morinda umbellata** var. **Archboldiana** Fosberg, var. nov.

Folia chartacea vix reticulata basi rotundata.

This variety differs from var. *bucidaefolia,* to which it is closest, in its usually larger chartaceous leaves which are up to 12 cm. long and 6.5 cm. wide, more rounded at base, and less prominently reticulate.

VITI LEVU: Serua: Thulanuku, vicinity of Ngaloa, Apr. 29, 1941, alt. 30 m., *Degener 15115* (USNA, TYPE, A); Naitasiri: Woods near road beyond Tamavua Village, 7 miles from Suva, alt. 150 m., *Gillespie 2194* (NY); Tholo North: Nauwanga, vicinity of Nandarivatu, alt. 750–900 m., *Degener 14814* (USNA, A); Nandarivatu, alt. 800–900 m., *Degener & Ordonez 13535* (USNA, A), *Greenwood 850* (USNA, A).

The Greenwood specimen represents a delicate small-leaved form which may merit further study when additional collections are available.

**Morinda mollis** A. Gray in Proc. Am. Acad. **4**: 41. 1860.

This liana, with all parts except the old stems densely and finely pubescent, and with membranous sharply acuminate leaves, presenting a very characteristic appearance, is closely allied to *M. umbellata,* but for the present is maintained as a species. No intermediates are known, and judging by the few collections available, the species is very uniform. It is known only from Viti Levu and Ovalau (*fide* Seemann). The type, *U. S. Expl. Exped.* (US), is without a definite locality.

## IXORA L.

**Ixora** Sect. **Vitixora** Fosberg, sect. nov.

Cyma capitata terminalis, foliis 2 suffulta; bractae lobique calycis lineares.

Shrubs or small trees, the young internodes decussately flattened, their edges rounded; leaves shortly petiolate to subsessile; stipules forming a short tube or sheath, but with lobes drawn out into long aristae; inflorescence sessile between a terminal pair of leaves (rarely between smaller axillary ones), a strongly congested head-like cyme with linear or filiform bracts crowded among the flowers; calyx-lobes linear or lanceolate; corolla with lobes only slightly sinistrorse in bud, oblong, obtuse, reflexed at anthesis; anthers on short filaments inserted in the sinuses, attached near base, linear-sagittate; style filiform, exceeding corolla-tube, the stigma fusiform, bifid, the lobes coherent at first, later divergent and reflexed; fruit fleshy, globose.

This group is, so far as known, confined to the Fiji Islands. It is probably closest to Sect. *Phylleilema* A. Gray, from which it differs in the character of the leaves subtending the heads (in *Vitixora* similar to foliage leaves, in *Phylleilema* broad and usually cordate), in the presence of linear bracts among the more closely crowded flowers of the larger heads, and in the elongate linear calyx-lobes.

*Vitixora* seems coordinate with what are regarded by Bremekamp as subgenera. To me *Ixora* seems such a coherent group, in spite of its size, that it may not readily be divided into convincing subgenera. The natural groups of species within the genus are mainly separated by characters of the inflorescence, with few other differences that correlate with these. In flower and fruit structure there is a striking uniformity. Therefore I regard the major species-groups at present as sections.

Four species of Sect. *Vitixora* are known (*I. Storckii* Seem., which I have not seen, may go here, but is too briefly described to be placed); they may be separated by the following key:

Leaves glabrous beneath.
- Leaves subsessile, with about 16–18 pairs of prominent veins, the calyx-lobes and bracts 4–5 mm. long (Vanua Levu) ..... *I. coronata* A. C. Sm.
- Leaves shortly petioled, with 12–14 pairs of inconspicuous veins, the bracts filiform, the calyx-lobes ligulate (Viti Levu, vicinity of Nandarivatu) ... *I. amplexicaulis* Gillespie.

Leaves shortly pubescent beneath.
- Leaves cordate at base (Viti Levu, Kandavu) ..... *I. pelagica* Seem.
- Leaves cuneate or acute at base (Vanua Levu, Taveuni) ..... *I. somosomaensis* Gillespie.

ABRAMSIA Gillespie

**Abramsia trichotoma** Gillespie in Bishop Mus. Bull. **91**: 29. 1932.

VANUA LEVU: Mathuata: Wainunu-Ndreketi divide, alt. 200–300 m., *Smith 1849* (GH, NY, US); Thakaundrove: Vatunivuamonde Mt., Savu Savu Bay region, alt. 300 m., *Degener & Ordonez 13964* (USNA, A). TAVEUNI: Western slope between Somosomo and Wairiki, alt. 600–830 m., *Smith 796* (GH, NY, US).

This species has heretofore been reported only from Viti Levu. *Smith 1849* has the corolla-tube several times the length of the lobes, which is much longer than that of other flowering material known.

PSYCHOTRIA L.

**Psychotria** L. Syst. ed. 10. 929. 1759.

*Calycodendron* A. C. Sm. in Bishop Mus. Bull. **141**: 154. 1936.

*Eumorphanthus* A. C. Sm. in Bishop Mus. Bull. **141**: 157. 1936.

The genus *Psychotria* is one of the most complex and difficult of all the groups of flowering plants in Fiji, and for that matter, in the whole Indo-Pacific area. In the Degener collection most of the previously described valid species are represented, as well as eight new ones, to which are added three new ones collected by Smith. There is little doubt that some of the described species will run together when more thorough collecting has been done and all of the types examined. Also, some of the supposedly endemic Fijian ones may prove to be identical with unsuspected ones from other island groups. At present, I would not attempt a revision, even of the Fijian ones, without an opportunity to study them in the field.

A number of presumably natural groups within the genus are apparent, some of which have been described as separate genera. Several of these may be confined to Fiji, while others are more widespread. It does not seem possible to determine the category to which they belong from the material available of the species known. The plants of the other parts of Melanesia will have to enter into any such evaluation, and especially those of New Guinea. Consequently, I am not assigning any definite status to the groups here reduced to *Psychotria*.

*Calycodendron* and *Eumorphanthus* are both chiefly characterized by an enlarged showy calyx and peculiar corolla forms. The types of corolla involved in these genera are to be found in *Psychotria*, except that they are there much smaller, and not usually associated with a particularly showy calyx. The corolla of *P. vitiensis* Fosberg (*Calycosia monticola* Gillespie) is certainly not significantly different from that of *Calycodendron*, and both the corolla and fruit of *P. confertiloba* A. C. Sm. are scarcely significantly different from those of *Eumorphanthus fragrans*. The tendency toward an enlarged, membranous, showy calyx is manifest in various species of *Psychotria* in Fiji (cf. *P. carnea, P. calycosa, P. macrocalyx, P. neurocalyx, P. St.-johnii,* etc.), and the groups that have been set off principally on this character seem to me to be merely the culminations of some of these lines of development, and, as such, cannot, in my opinion, be maintained as genera, although they may represent closely related groups of species. When a comprehensive knowledge of this vast genus is acquired, it may well be found that some of the entire lines of evolution within it are not properly associated together, and that they will have to be separated, but so far I see no basis for this. At present I think that *Calycodendron* and *Eumorphanthus* (including *Psychotria confertiloba* A. C. Sm.) represent natural

species-groups within the genus *Psychotria,* to which I cannot, as yet, assign a definite rank.

Another such group, which may well be connected with *Eumorphanthus,* is that described as the subgenus *Piptilema* A. Gray. This seems to represent an important evolutionary plexus among the Fijian species of the genus, although it probably does not merit the rank of subgenus. Of the characters assigned to it by Gray, "stipulae squamaceae" does not apply, as the stipules seem to be of the calyptrate type, ordinarily with forked free apices, common to the majority of *Psychotria* species of Fiji and Polynesia; "caducissimae" is correct; "flores sessiles, capitellati, ebracteolati" is true only of some of the species that must go here. "Capitulo terminali primum bracteis squamaceis caducis involucrato" refers, of course, to the habit, common to the species with the type of stipules mentioned above, of bearing the inflorescences at the terminal node, surrounded by a pair of enlarged stipules which are shed as the inflorescences develop.

The description of the pyrenes and seeds is the part that seems to characterize a group of related species, including those referred by Gray to his subgenus. The fruit of this group is, in gross appearance, ovoid, oval, or even rotund, but dries to a very characteristic form, broad and compressed basally, then abruptly contracted, even hastate, with the distal portion prolonged, with a ridge or keel on each face. The pyrenes are broad, thin, and hastate basally, abruptly narrowed above, then gradually narrowed to a subtruncate or toothed apex. The dorsal faces have a prominent keel or wing, at least on the apical part, sometimes extending to the base. In some species there are subsidiary keels beside the main central one. Other modifications are introduced by interruptions in the keels, especially in the secondary ones. I do not know, as yet, what the relationship of similar species with the keels on the pyrenes arranged differently is to this group, whether one of derivation or merely evolution from similar ancestors. The nucleus of the group is composed of *P. Pickeringii, P. monocarpa, P. aurantiocarpa, P. cordata, P. platycocca, P. taviunensis, P. griseifolia,* and, perhaps, *P. filipes.* These species are variable, especially *P. Pickeringii* (cf. Gillespie in Bishop Mus. Bull. **74**: 34. 1930), and seem to intergrade in various directions. Only extensive collections and much careful field study will clarify their interrelationships and their connections with other species and species-groups. I suspect that *P. neurocalyx* and *P. furcans* may be related here, and that if *P. furcans* is correctly so interpreted, then also probably *P. edentata* and *P. pachyantha,* of which the fruits are not known. *P. Caldwellii* seems obviously close to this group, but has the lateral flat parts of the pyrenes prolonged almost to the apex.

**Psychotria pubiflora** (A. Gray) Fosberg, comb. nov.

*Calycosia pubiflora* A. Gray in Proc. Am. Acad. **4**: 306. 1860.

*Calycodendron pubiflorum* A. C. Sm. in Bishop Mus. Bull. **141**: 155. 1936.

**Psychotria magnifica** (Gillespie) Fosberg, comb. nov.

*Calycosia magnifica* Gillespie in Bishop Mus. Bull. **74**: 39. 1930.

*Calycodendron magnificum* A. C. Sm. in Bishop Mus. Bull. **141**: 156. 1936.

**Psychotria glabra** (Turrill) Fosberg, comb. nov.

*Calycosia glabra* Turrill in Jour. Linn. Soc. Bot. **43**: 26. 1915.

*Calycodendron glabrum* A. C. Sm. in Bishop Mus. Bull. **141**: 155. 1936.

**Psychotria fragrans** (Gillespie) Fosberg, comb. nov.

*Calycosia fragrans* Gillespie in Bishop Mus. Bull. **74**: 38. 1930.

*Calycodendron fragrans* A. C. Sm. in Bishop Mus. Bull. **141**: 155. 1936.

**Psychotria rufocalyx** Fosberg, nom. nov.

*Calycodendron rufescens* A. C. Sm. in Bishop Mus. Bull. **141:** 156. 1936; not *Psychotria rufescens* H. B. K.

**Psychotria Gibbsiae** var. **velutina** Fosberg, var. nov.

Planta velutino-pilosa; cyma compacta.

Differs from *Psychotria Gibbsiae* Moore in the more compact inflorescence with thicker branches and very short pedicels, and in having the young parts, petioles, cymes, hypanthia, and calyces velutinous-pilose, with the undersides of the leaves sparsely so.

Viti Levu: Tholo West: Mbuyombuyo, near Namboutini, June 18, 1941, *Tabualewa 15605* (USNA, type, A).

The specimen is rather inadequate, but this disposition of it seems correct.

**Psychotria Eumorphanthus** Fosberg, nom. nov.

*Eumorphanthus fragrans* A. C. Sm. in Bishop Mus. Bull. **141:** 158. 1936; not *Psychotria fragrans* (Gillespie) Fosberg.

**Psychotria vitiensis** Fosberg, nom. nov.

*Psychotria viticnsis* Seem. in Bonplandia **9:** 257, nomen. 1861; Fl. Vit. 136, as synonym. 1866.

*Calycosia monticola* Gillespie in Bishop Mus. Bull. **74:** 39. *f. 55.* 1930; not *Psychotria monticola* Hiern in Oliv. Fl. Trop. Afr. **3:** 199. 1877.

Although this species has been reduced to *P. calycosa* A. Gray by Gray, Seemann, and A. C. Smith, I am of the opinion that it is distinct. It differs from the type of that species in size and texture of leaves, size of cyme, and especially in the calyx, which is fusiform, not sharply distinct from the hypanthium, contracted somewhat above, then flaring at apex, rather than broadly campanulate and abruptly dilated above the hypanthium. It is very well illustrated by Gillespie.

Since Seemann's name was published first as a nomen nudum, then in synonymy, and Gillespie's specific epithet is preoccupied in *Psychotria, P. vitiensis* must be regarded as a new name, starting with the present publication.

**Psychotria calycosa** A. Gray in Proc. Am. Acad. **4:** 45. 1860.

I have studied three sheets of the U. S. Exploring Expedition material that formed the basis of this species, as well as three that Gray subsequently referred to it and quite a number that have been so identified by subsequent workers. Of the three original sheets, only the one at the U. S. National Herbarium is in such a state of preservation as to be readily identifiable. It is here designated as the type. It is from Ovalau. The following description is drawn from it.

Glabrous; leaves oblong-oblanceolate, the blades 7–9 cm. long, 2–3 cm. wide, somewhat acuminate at apex, contracted to an acute base, chartaceous, with 9–11 rather spreading secondary veins on a side, which anastomose near the margin, the petiole 6–10 mm. long; well developed stipules not available; cyme solitary at terminal node, but with a small bud beside it which suggests that it will become lateral, the peduncle 2.5 cm. long, pentachotomous, the branches about 12 mm. long, each 2–3-branched at apex, the branchlets short, bearing single flowers or clusters of 3 flowers on pedicels 2–3 mm. long (if the sheets at NY and GH belong here, the branching of the inflorescence is somewhat variable); calyces campanulate, about 3.5 mm. long, 5–6 mm. wide, deeply 4-lobed, the lobes ovate, rounded, somewhat 3–5-nerved, spreading to reflexed; corolla in bud only, glabrous externally except that the sutures are somewhat hirtellous, the whole at least 12 mm. long, the tube membranous, glabrous within, the throat and lobes thickened and densely woolly within, the wool longest in throat, the anthers at-

tached basally on short filaments, with 2 basal lobes projecting well below the attachment, inserted well below the sinuses; style filiform, glabrous, somewhat bifid and fleshy at apex; fruits not available; some buds not yet full-sized tending to open when dried.

The Gray Herbarium sheet seems substantially the same thing, but the cyme is only trichotomous, and the calyces are rather poorly developed, with the lobes tending to be unequal and the buds more hirtellous along the sutures.

The New York sheet has two twigs, one much like those described above, but with little left of the cyme, the other a different looking plant, too young to be identified with certainty at present.

All other material that I have seen referred to this species either belongs somewhere else or is not in condition to be positively identified. The three sheets that Gray referred here subsequent to his original description belong to *P. vitiensis* Fosberg.

**Psychotria platycocca** A. Gray in Proc. Am. Acad. **4**: 47. 1860.

This species seems not uncommon, judging by the number of collections, but most of the material that has in the past been referred here seems to belong elsewhere. As apparent from an examination of the original material (*U. S. Expl. Exped.*, US, GH), the species is glabrous, with obovate, subacuminate, cuneate, chartaceous leaves, which are variable in size but rather small, slender trichotomous cymes bearing on each branch a cluster of about 3 sessile or subsessile flowers, ovoid fruits with broad, flat, subhastate pyrenes, widest near base, and with a high thin dorsal keel in the distal two-thirds.

Of the two sheets of the type material seen, the U. S. National Herbarium sheet is definitely from Ovalau, while the Gray sheet is merely labeled "Feejee Islands," the former is more ample and has, in addition to immature flowering cymes, dissections of fruits. Therefore the U. S. sheet is designated as the type. It represents an unusually large-leaved robust form. The species is also known from Viti Levu (*Degener 14900, 14678, 14395, Gillespie 4093, 3184*) and from Vanua Levu (*Degener 14241*).

The species is highly variable, even with the completely discrepant material excluded, approaching *P. filipes* through plants with slender cymes (*Degener 14900*) and *P. Pickeringii* var. *solanoides* through specimens with very short, poorly developed cymes (*Degener 14395*). Plants from Ovalau have the leaf-bases cuneate, *Degener 14241* from Vanua Levu has them subcordate, and the material from Viti Levu has them, in general, attenuate.

**Psychotria Pickeringii** var. **solanoides** (Turrill) Fosberg, comb. nov.

*Psychotria solanoides* Turrill in Jour. Linn. Soc. Bot. **43**: 28. 1915.

This plant differs from the variable *P. Pickeringii* A. Gray only in the rusty puberulence on most of its parts and in the shortly pedicellate flowers and fruits.

VITI LEVU: Tholo North: Nandarivatu, *Gillespie 4376* (NY), *Degener 14522* (USNA, A) (type locality). VANUA LEVU: Thakaundrove: South slope of Korotini Range, below Navitho Pass, *Smith 495* (GH, NY, US) (compared with type by A. C. Smith).

Some specimens, such as *Degener 13582*, from Nandarivatu, are intermediate, in that they have the puberulence but have sessile flowers.

**Psychotria taviunensis** Gillespie in Bishop Mus. Bull. **74**: 34. *f. 48*. 1930.

VANUA LEVU: Thakaundrove: Savu Savu Bay region, Vatunivuamonde Mt., *Degener & Ordonez 13999* (USNA, A); eastern buttress of Mt. Ndikeva, *Smith 1892* (GH, NY, US). TAVEUNI: *Gillespie 4722* (NY, ISOTYPE), *Smith 752* (GH, NY, US).

The Vanua Levu collections represent an extension of the range of this species from Taveuni. It is closest to *P. griseifolia* S. Moore, known as yet only from Viti Levu, but has more robust, more closely branched and more floriferous cymes, acuminate leaves, and rusty pubescence. The cymes are about 4-times branched.

**Psychotria griseifolia** S. Moore in Jour. Linn. Soc. Bot. **39**: 153. 1909.

VITI LEVU: Tholo North: Nauwanga, vicinity of Nandarivatu, alt. 750–900 m., *Degener 14524* (USNA, A); vicinity of Nandarivatu, *Degener 14336, 14461* (both USNA, A); Mt. Matomba, near Nandarivatu, *Degener 15632* (USNA, A).

The specimens which I have seen that seem referable to this species are all in fruit, while the type (*Gibbs 706*) was in flower, and so it is not positive that they belong here. However, since the description seems to fit otherwise, I feel safe in adding a description of the fruit from these specimens. This shows definitely that the species belongs to the *Piptilema* group.

Fruit, when dry, strongly hastate, usually about as broad as long, 7–10 mm. long and broad, compressed but with strong keels, the base acute, the apex produced, blunt, variable; pyrenes slightly smaller, flat, acute or slightly acuminate at base, prominently hastate, the lobes rounded, abruptly contracted distally, the apical lobe rounded, variable in degree of elongation, with dorsal keel high in middle, low and somewhat grooved or doubled apically, tapering off toward base.

Moore does not mention the fact that the leaves of this species, when dry, are conspicuously white-reticulate-veined.

The following variety seems somewhat distinct.

**Psychotria griseifolia** var. **unicarinata** Fosberg, var. nov.

Ramuli dense ferrugineo-puberulentes; folia obovata acuminata basi cuneata, valde albo-reticulata, infra vix puberuli; petioli cymaeque puberulentes.

Branchlets densely rusty-puberulent; leaves large, chartaceous, obovate, acuminate at apex, cuneate at base, conspicuously white-reticulate-veined and thinly puberulent beneath, the petiole 1–2.5 cm. long, puberulent; cymes puberulent; otherwise as in *P. griseifolia.*

VITI LEVU: Tholo North: Mt. Matomba, Nandala, vicinity of Nandarivatu, Feb. 28, 1941, *Degener 14640* (A, TYPE), *14510* (A), *14730* (A); Nauwanga, same general locality, *Degener 14624* (USNA, A); Namosi: Naitarandamu Mt., *Gillespie 3093* (NY).

Gillespie had indicated his specimen as a new species. Vegetatively this variety resembles *P. St.-johnii* and *P. Degeneri* so much as to be mistaken for them, but the fruits are quite different.

**Psychotria filipes** A. Gray in Proc. Am. Acad. **4**: 46. 1860.

Glabrous; leaves obovate, long-acuminate, cordate at base, up to 10 cm. long and 5 cm. wide, the petiole 1.5–3 cm. long; stipules calyptrate, up to 2 cm. long, with very short free tips; cymes 4 at a node, terminal, about 8 cm. long, very slender, pendent, the peduncle 4–6 cm. long, the branches 4, these twice trichotomous, the branchlets ending in single flowers or slightly irregular clusters of 2 or 3 flowers; flowers with calyx about 0.5 mm. long, acutely 4-dentate, the corolla with tube 2 mm. long, 1 mm. thick, the lobes 1 mm. long, ovate, spreading, the tips of anthers exserted.

WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (US, TYPE).

Other than the type, all of the material that I have seen referred to this species differs in being noticeably pubescent and in having more robust erect cymes, as well as much more prominently reticulate-veined leaves. Gillespie's description (in Bishop Mus. Bull. **74**: 33. 1930) says "a glabrous shrub" but his plate (op.

cit. *f. 46*) shows a plant much more like the other specimens mentioned rather than the type. I have not seen his specimen. These plants fit fairly well the description of *P. griseifolia* S. Moore.

**Psychotria aurantiocarpa** Fosberg, sp. nov.

Frutex glaber gracilis; folia anguste obovata vel oblanceolata valde acuminata; stipulae calyptratae valde biaristatae; cymae geminatae pedunculatae capitulatae; fructus subsolitarius ovatus subhastatus 15–18 mm. longus, pyrenis valde alato-carinatis.

Shrub up to 4 m. tall, glabrous, with rather slender branchlets; leaves thinly coriaceous, narrowly obovate or oblanceolate, up to 10 cm. long and about 3 cm. wide, strongly acuminate at apex, acute to abruptly contracted at base, the secondary veins 8–10 on a side, rather obscure, the network very obscure, the petiole up to 1 cm. long, rather thick, very narrowly winged; stipules calyptrate, ovate, each with 2 long aristate free tips, about 12 mm. long, of which 7 mm. is free tip; inflorescences terminal, in pairs, the peduncle 2–2.5 cm. long, apparently bearing several sessile or subsessile flowers (but known only in fruit); only 1 or 2 fruits maturing on a peduncle, these ovate, flattened, subhastate, rounded at base, subtruncate at apex, 15–18 mm. long, about 10 mm. wide, the pyrenes slightly smaller, abruptly slightly narrowed (subhastate) about ⅓ the way up, the lower part flat, the median dorsal keel very thin, wing-like, extending from just above base to near apex.

VANUA LEVU: Thakaundrove: Mt. Mariko, dense forest, alt. 600–866 m., Nov. 14, 1933, *Smith 449* (GH, NY, TYPE, US).

Appears to be closest to *P. Pickeringii* var. *solanoides* (Turrill) Fosberg, but differs in being glabrous and in having much longer peduncles and larger fruits.

**Psychotria monocarpa** Fosberg, sp. nov.

Frutex glaber gracilis; folia obovata obtusa chartacea; stipulae angustatae aristatae; fructus hastulatus sessilis terminalis solitarius aurantiacus 6–7 mm. longus, pyrenis valde carinatis.

Shrub 3–4 m. tall, glabrous, with slender branchlets; leaves chartaceous, obovate, up to 6 cm. long and 3 cm. wide, the apex obtuse, the base cuneate-attenuate, the veins not very prominent, 6–8 on a side, the petiole slender, up to 12 mm. long; stipules calyptrate, very narrow, about 5 mm. long, the free tips short, aristate; flowers unavailable; fruits bright orange, sessile, terminal, solitary (flowers possibly more numerous), ovoid, 6–7 mm. long, 3–4 mm. wide, abruptly narrowed about half-way up (hastulate), the pyrenes only slightly smaller, flat but with a very high dorsal keel almost as long as body of pyrene.

VANUA LEVU: Thakaundrove: Natewa Peninsula, hills south of Natewa, alt. 400–600 m., June 12, 1934, *Smith 1951* (GH, NY, TYPE, US).

This is probably closest to *P. Pickeringii* A. Gray, but differs from that variable species in the obovate obtuse leaves and in the solitary slightly smaller fruits.

**Psychotria cordata** A. Gray in Proc. Am. Acad. **4:** 46. 1860.

Glabrous; leaves slightly obovate, long-acuminate, cordate at base, the blade 6 cm. long, the veins not especially prominent, the petiole 2.5 cm. long; inflorescence capitate, sessile, terminal; fruit 7–9 mm. long.

WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (US, TYPE).

**Psychotria cordata** A. Gray var. **podantha** Fosberg, var. nov.

Folia breviter acuminata, nervis infra albis; fructus pedicellatus 10–13 mm. longus.

Differs from the U. S. Exploring Expedition material in having the leaves more shortly acuminate, more often obovate, the veins white beneath, the fruit

(and probably flowers) on pedicels 1–2 cm. long, and the fruit itself 10–13 mm. long.

VITI LEVU: Tholo North: Nauwanga, vicinity of Nandarivatu, *Degener 14831* (USNA, TYPE, A) (Mar. 31, 1941), *14827* (USNA, A), *14829* (USNA, A).

A small tree, up to 5 m. tall, with orange fruit.

**Psychotria serpens** L. var. **parvula** (A. Gray) Fosberg, comb. nov.

*Psychotria parvula* A. Gray in Proc. Am. Acad. **4**: 45. 1858.

*Psychotria minor* Turrill in Jour. Linn. Soc. Bot. **43**: 27. 1915.

This form does not differ constantly in any respect from all Asiatic specimens of *P. serpens*, although the small leaves, short internodes, and resulting crowded leaves give it an aspect different from the greater part of the Asiatic material. Good flowering specimens are not available, but if *P. minor* is correctly placed here the non-barbate corolla-throat may prove to be a good character. However, even the Fijian plants vary so much that no more than varietal separation is possible.

VITI LEVU: Tholo North: Vicinity of Nandarivatu, *Degener 14378* (USNA, A). VANUA LEVU: Thakaundrove: Mt. Mbatini, *Smith 692, 693* (both GH, NY, US); Yanawai River region, Mt. Kasi, *Smith 1760* (GH, NY, US). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (NY, ISOTYPE).

The type of *P. minor*, which I have not seen, is *im Thurn 21*, from the top of Mt. Victoria, Viti Levu.

**Psychotria macroserpens** Fosberg, sp. nov.

Frutex scandens glaber; folia ovalia obtusa; stipulae caducae triangulares; cyma hemispherica ramis crassis trichotomis; fructus globosus 8 mm. longus, pyrenis rugosis 3–4-carinatis.

Glabrous liana; leaves oval to almost rotund, up to about 6 cm. long and 4.5 cm. wide, obtuse or rounded at apex, strongly contracted at base, subcoriaceous, with 6 or 7 secondary veins on a side, the petioles 8–15 mm. long; stipules caducous, low-triangular, obtuse, about 2 mm. long; cyme 4–8 cm. long, 3–6-times trichotomous, hemispheric, the branches thick, densely papillose, the internodes short; flowers not seen, said by collector to be white; fruit white, spherical to slightly elongate, about 8 mm. long, crowned by a short, obtusely and irregularly dentate, puberulent calyx-ring, the rest of fruit glabrate, the pyrenes orbicular, with 3 or 4 blunt rugose keels.

KAMBARA: In forest on limestone formation, alt. 0–100 m., March 2, 1934, *Smith 1246* (GH, NY, TYPE, US).

This species seems, like *P. tephrosantha* A. Gray, to be a Fijian derivative of the widespread *P. serpens* L. It differs from both *P. serpens* and *P. tephrosantha* in its broad, almost orbicular leaves, heavy inflorescence, and much larger fruits.

**Psychotria Archboldiana** Fosberg, sp. nov.

Arbor parva; folia elliptica; stipulae subpersistentes striatae; cyma capitata vel subcapitata vel tricapitata terminalis; calyx viridis patens; corolla glabra; fructus obovoideus subtruncatus, pyrenis basi obtusis apice valde emarginatis dorso tuberculatis.

Small tree, up to 3 m. tall, slender, glabrous; leaves elliptic, up to 10 cm. long and 4 cm. wide, usually smaller, acute or slightly acuminate at apex, acute or slightly attenuate at base, chartaceous, the secondary veins 6–8 on a side, not very prominent, the petiole 5–10 mm. long; stipules triangular, about 5–6 mm. long, becoming free, more or less striate longitudinally, subpersistent, breaking transversely, the basal portions remaining on the nodes for some time; cymes terminal,

about 2 cm. long, capitate or subcapitate, or trichotomous, then bearing 3 capitate clusters; calyx green, spreading, about 3–5 mm. wide, obtusely lobed; corolla glabrous, apparently salverform (buds only available), the limb in bud much thicker than tube, rounded at apex; fruit obovoid, 6 mm. long, 4 mm. wide, subtruncate at apex, crowned with shrivelled remains of calyx, the pyrenes obtuse at base, deeply emarginate at apex with a projection in the sinus, dorsally strongly and irregularly tuberculate, 6 mm. long, 4 mm. wide.

Viti Levu: Tholo West: Naruku, vicinity of Mbelo, near Vatukarasa, alt. 250 m., May 18, 1941, *Degener 15316* (USNA, type, A); Yawe, same general locality, *Degener 15291* (USNA, A); Uluvatu, same general locality, *Degener 15258* (USNA, A); Mbulu, near Sovi Bay, alt. 0–60 m., *Degener 15049* (USNA, A).

This species is apparently closest to *P. pacifica* K. Schum., of Samoa, from which it differs in its much smaller leaves with fewer nerves, smaller stipules, simpler and much smaller inflorescence, and glabrous flowers. It is vegetatively much like *P. Gillespicana* A. C. Sm., but differs in its condensed inflorescences and expanded green calyces. The fruits and flowers are much like those of *P. carnea* (Forst.) A. C. Sm., but smaller, and it also differs in its much smaller and thinner leaves with fewer veins, and in its condensed cymes. It probably belongs to the same group of species (Sect. *Eumachia* (DC.) A. C. Sm.). It lacks the anthocyanin pigment commonly found in members of the genus. The native name (Serua dialect) is *vunga*, and a tea made from the leaves is said to be used medicinally.

**Psychotria brevicalyx** Fosberg, sp. nov.

Arbor parva *P. turbinatae* A. Gray affinis, sed foliis crassioribus infra pubescentibus, cyma pauciflora conspicue pubescente, pedunculo longiore et crassiore, fructu pubescente calyce brevissimo coronato.

Small tree, up to 3 m. tall, the young parts pubescent, glabrate; leaves ample, elliptic to obovate, up to 20 cm. long and 9 cm. wide, bluntly acute at apex, cuneate at base, chartaceous, pubescent beneath, especially on midrib, the secondary veins 11–15 on a side, moderately prominent, the network more or less obscure, the petioles up to 3 cm. long; stipules calyptrate, caducous, densely pubescent, 1–1.5 cm. long, with well developed free tips which are glabrous on inner surface; cymes 2–4 in falsely terminal clusters, 6–10 cm. long, long-pedunculate, stiff, branched 2–4 times, pilose with dirty-whitish hairs, the peduncle up to 8 cm. long; fruits on pedicels 3–7 mm. long, red, turbinate, 7–8 mm. long, 5–6 mm. wide, pilose, crowned with the exceedingly short 5-denticulate calyx-ring, the pyrenes 6 mm. long, 4 mm. wide, truncate above, acute below, the lower part flat, the upper part strongly tricarinate, with a deep ventral groove at distal end; corollas not available except for one persisting on a fruit of *Degener 15154*, which may not be normal, but is about 1 cm. long, salverform, with a thick densely tomentose tube and broad orbicular lobes about 5 mm. long, said to be white.

Viti Levu: Tholo West: Yawe, vicinity of Mbelo, near Vatukarasa, alt. 300 m., May 15, 1941, *Degener 15292* (USNA, type, A); Uluvatu, same general locality, *Degener 15256* (USNA, A); *Tabualewa 15620* (USNA, A); Serua: Vatuvilakia, vicinity of Ngaloa, alt. 0–150 m., *Degener 15154* (USNA, A).

Close to *P. turbinata* A. Gray, but differing in the pubescent under surface of the thicker leaves, and in the stiff, heavier, fewer-flowered, conspicuously pubescent cymes and pubescent fruit. The cymes of *P. turbinata* are minutely puberulent, with a much shorter peduncle.

**Psychotria crassiflora** Fosberg, sp. nov.

Arbor parva *P. turbinatae* A. Gray affinis, sed foliis amplis obovatis, apicibus liberis stipulorum duris linearibus, cyma pauciflora, floribus valde carnosis, tubo corollae intus solido.

Small tree, the vegetative parts glabrous, the branchlets rather thick and somewhat fistulose; leaves ample, obovate, up to 21 cm. long and 10 cm. wide, the apex slightly bluntly acuminate, the base cuneate, the secondary veins 15 or 16 on a side, rather prominent, widely spreading, anastomosing near margin, the petiole 1–3 cm. long; stipules caducous, rather variable in size, up to 2 cm. long, the lower parts united, the upper part prolonged into 2 stiff linear aristae about 1 cm. long; cymes 3 at a node (often 1 or 2 broken off), about 10 cm. long, heavy, stiff, erect, 2- or 3-times trichotomous, thinly hirtellous, glabrate, the pedicels 6–12 mm. long, thickened upward, thinly hirtellous; flowers fleshy; calyx campanulate, 5–6 mm. long and wide, truncate, thick and fleshy-coriaceous, the free portion 3 mm. long, with upper edge calloused and appearing like a scar, bearing inside around the base a single circle of long delicate hairs, otherwise smooth internally, externally slightly hirtellous, glabrate; corolla cylindric or slightly swollen near base, contracted at base to a small attachment, very thick and fleshy-coriaceous in texture, densely sericeous-hirtellous externally, the lobes 5 or 6, erect, about 4 mm. long and 2 mm. wide, oblong, conspicuously hooked at apex, finely puberulent within except inside of hook which is hirtellous with the hairs pointing downward, the throat somewhat bearded with longer hairs pointing upward, the somewhat swollen tube filled solidly with tissue except at extreme base, closely investing style, a cavity at extreme base about 1 mm. wide and high containing the small hemispheric disk; anthers linear-oblong, 3 mm. long, on very short filaments, attached near base, inserted in corolla-throat; style glabrous, filiform, 8 mm. long, deeply bifid at apex, the lobes not thickened, about 2 mm. long; ovary 2-celled, with a single erect basal ovule in each cell; only one fruit available, probably not mature, turbinate, about 1 cm. long and broad.

VITI LEVU: Serua: Vatutavathe, vicinity of Ngaloa, alt. 150 m., May 5, 1941, *Degener 15178* (USNA, TYPE, A).

This species is apparently related to *P. turbinata* A. Gray, but differs from it in the larger, more obovate leaves, in the stipules with stiff, linear, free tips instead of expanded foliaceous ones, in the much fewer-flowered cymes, and, if Gillespie's interpretation (in Bishop Mus. Bull. **91**: 36. *f. 41.* 1932) of *P. turbinata* is correct, in the entirely different flowers.

The fleshy corolla with the tube filled with tissue is unknown in *Psychotria,* but in every other respect the plant matches this genus. The possibility is, of course, not excluded that the corolla character is the result of an insect sting, but it was uniform in all flowers dissected, and no evidence was found of insect activity.

**Psychotria furcans** Fosberg, sp. nov.

Frutex vel arbor parva; folia elliptica petiolata; stipulae supra furcantes in laminas lanceolatas; cyma terminalis solitaria laxa pentachotoma dura, ramulis elongatis, corollis extra glabris intus dense barbatis; fructus late ellipsoideus, in sicco tuberculatus calyce persistente coronatus, pyrenis subhastatis dorso multicarinatis, carinis tenuibus eroso-incisis.

Shrub or small tree with slender branches, the vegetative parts glabrous; leaves elliptic or oblong, acute at both ends, subcoriaceous, about 8 cm. long, 2.5–3.5 cm. wide, on petioles 1–1.5 cm. long, the veins 10 or 11 on a side, not especially prominent; stipules about 1 cm. long, united below, forked above into 2 lanceolate free blades sometimes over half total length of stipules; cyme solitary, terminal, glabrous, 7–10 cm. long, loosely branched, the branches with a stiff appearance, the peduncle 2–5 cm. long, with a tendency to be reflexed, the primary branches 4 or 5, each branching 2 or 3 times; flowers shortly pedicellate; open flowers unavailable, the buds with calyx hemispheric to somewhat spreading, 1–1.5 mm. long, the margin subentire to irregularly obtusely dentate, the corolla glabrous

but appearing somewhat scurfy in bud, densely bearded within at top of tube; style glabrous, filiform, about 12 mm. long, shortly bifid at apex; fruit broadly and irregularly ellipsoid, 12 mm. long including the persistent somewhat enlarged calyx, 7–8 mm. wide, red, the pyrenes 9 mm. long, 6.5 mm. wide, ovate, rather flat and expanded into a thin wing-like portion below, the apical portion contracted and protruding, producing a subhastate outline, subtruncate at apex, shortly tridentate, the whole with a very prominent thin median dorsal keel and several secondary keels on each side, these broken or erose-incised, giving a more or less spinose appearance, and causing the fruit to be strongly tuberculate when dry.

Viti Levu: Tholo North: Mt. Matomba, Nandala, vicinity of Nandarivatu, alt. 750–900 m., Feb. 18, 1941, *Degener 14450* (USNA, type, A) (flowering). Vanua Levu: Thakaundrove: Eastern drainage of Yanawai River, alt. 20–160 m., *Degener & Ordonez 14092* (USNA, A) (fruiting).

Differs from its relatives, *P. edentata* A. C. Sm. and *P. pachyantha* A. C. Sm., in its smaller, elliptic, longer petiolate leaves, conspicuously forked stipules, and slender, rather stiff, usually pentachotomous cymes with elongate branches. It is entirely possible that the two collections associated here do not belong together, since the localities are so far apart and at different altitudes, and one is known only in flower and the other in fruit, but no differences of much consequence are evident between them.

**Psychotria pittosporifolia** Fosberg, sp. nov.

Arbor parva glabra; folia spathulato-obovata flavo-virides; stipulae connatae apice liberae et bifidae; cyma terminalis multiflora viridi-puberulenta; flores sessiles, calyce brevi dense puberulo, corolla hypocraterimorpha sparse puberula intus barbata, antheris exsertis.

Small tree about 3 m. tall, the vegetative parts glabrous; leaves spatulate-obovate, up to about 10 cm. long and 4.5 cm. wide, usually abruptly short-acuminate at apex, cuneate-attenuate at base into a petiole 1–2 cm. long, the blade subcoriaceous with margin slightly revolute, drying greenish-yellow above, paler beneath; stipules 8–10 mm. long, calyptrate, with 4 prominent free tips resulting from bifid apices; cymes solitary or rarely 2, terminal, many-flowered, up to 7 cm. long, greenish-puberulent, the peduncles up to 4 cm. long, the primary branches usually 5, these branched 3 or 4 times, ending in a cluster of 2–4 sessile flowers; calyx less than 1 mm. long, shallowly 5-dentate, densely puberulent; corolla white, salverform, 8–9 mm. long, the tube about 5 mm. long, very sparsely puberulent without, glabrous within below, densely bearded in upper part, the lobes oblong, about 4 mm. long, densely puberulent without, tomentose within; anthers about 1 mm. long, exserted on filaments about 2 mm. long; style glabrous, filiform, bifid above.

Viti Levu: Serua: Vatutavathe, vicinity of Ngaloa, alt. 150 m., May 5, 1941, *Degener 15180* (USNA, type, A); near Mt. Ngamo, vicinity of Ngaloa, *Degener 15059* (USNA, A).

Perhaps there are two types of flowers in this species, as the anthers are less exserted in some. However, this may be a matter of age. The corolla-tube is also rather variable.

This plant differs from the closely related *P. chrysophylla,* also of Viti Levu but from Tholo East, in its spatulate-obovate leaves, attenuate to the base, smaller calyx, and corolla pubescent within the longer lobes. The similarity in aspect to certain species of *Pittosporum* suggests the name.

**Psychotria Degeneri** Fosberg, sp. nov.

Arbor parva; folia ampla elliptica vel anguste obovata acuminata albo-reticulata pilosa; stipulae calyptratae pilosae; cymae 3–10 terminales pallide pilosae; flores

albi, calyce breviter campanulato non venuloso, corolla infundibuliformi extra sparse pilosa; fructus clavatus.

Small tree up to 5 m. tall, the branchlets glabrous or very early glabrate; leaves chartaceous, elliptic to narrowly obovate, up to 25 cm. long and 10 cm. wide, acuminate at apex, cuneate at base, more or less pilose on both sides, especially beneath, densely so on midrib and veins, sometimes somewhat glabrate; strongly and conspicuously venulose, the veins white in dried specimens, the secondaries 13–20 on a side, connected by a strong network, the petiole up to 6 cm. long, pilose; stipules calyptrate, early caducous, pilose, about 1 cm. long, the free tips small; cymes loose, slender, or somewhat shortened and contracted, 2–6 cm. long, whitish- to brownish-pilose, borne 3–10 together terminally, perhaps representing a single ample cymose panicle of which the peduncle has been suppressed, each branched 2 or 3 times, each branchlet bearing 2 or 3 shortly pedicellate white flowers; calyx and hypanthium pilose, the calyx shortly campanulate, about 1 mm. long, shallowly 5-lobed to subtruncate, not veiny; buds club-shaped, rounded at apex, the corolla funnelform, 8 (–11) mm. long, glabrous within, sparsely pilose externally, especially toward apex, 5-lobed, the lobes ovate, 2 mm. long; anthers oblong, 1.5 mm. long, attached subbasally on free filaments of about the same length, inserted below sinuses, the anthers exserted almost their length; disk hemispherical, the style glabrous, filiform, 5 mm. long, bifid 1.5 mm. at apex, the lobes flattened; fruit clavate, 7 mm. long, the pyrenes acute at base, truncate at apex, tricarinate dorsally, the keels somewhat irregular.

Viti Levu: Ra: Tuvavatu, vicinity of Rewasa, near Vaileka, alt. 50–200 m., May 30, 1941, *Degener 15374* (USNA, type, A); Tholo North: Nandarivatu, *Greenwood 848* (USNA, A); Mt. Matomba, Nandala, vicinity of Nandarivatu, alt. 750–900 m., *Degener 14447* (A); Serua: Vatutavathe, vicinity of Ngaloa, alt. 0–150 m., *Degener 15214* (A) (inflorescence condensed).

This is close to *P. St.-johnii* Fosberg, but differs in its usually glabrous branchlets, generally whitish or light brown pubescence, non-venulose calyces, longer, funnelform corollas which are sparsely pilose externally, and clavate rather than ovoid fruit.

**Psychotria tetragonoides** Fosberg, sp. nov.

Arbor parva; folia elliptica infra pilosa; stipulae ferrugineo-tomentosae; cyma terminalis sessilis, floribus albis, calyce truncato, corolla infundibuliformi valde lobata extra sparse pubescente intus glabra, antheris exsertis; fructus turbinatus vix pedicellatus.

Small tree, the branchlets rusty-tomentose when young, glabrate; leaves elliptic, up to 17 cm. long and 5.5 cm. wide, chartaceous, the apex acuminate, the base cuneate to attenuate, the margin somewhat revolute, the upper surface glabrous, the lower surface pilose, especially on midrib, the petiole 2–3 cm. long; stipules 1–1.5 cm. long, densely rusty-tomentose, the pair surrounding the inflorescence forming a more or less globose terminal bud, the free apices not well developed; inflorescence terminal, capitate, sessile (pedicels slightly developed in fruiting plant); flowers white; calyx very short, truncate; corolla funnelform to salverform, 15 mm. long, thinly pubescent without, glabrous within, the tube 9–10 mm. long, the lobes 6 mm. long, ovate; anthers oblong, 1.5 mm. long, exserted on short filaments; style filiform, glabrous, slightly enlarged upward, bifid at apex into 2 flattened lobes 2 mm. long; disk hemispheric; fruit red, turbinate, 8 mm. long, 5–6 mm. wide, quite fleshy, the pyrenes roughly triangular, 6 mm. long, 4 mm. wide, truncate at apex, acute at base, with a constriction near apex, 3 blunt dorsal keels in apical part, and a sinus or groove ventrally at apex.

Viti Levu: Serua: Vatutavathe, vicinity of Ngaloa, alt. 150 m., May 5, 1941, *Degener 15213* (USNA, type, A); Tholo North: Nandrau, vicinity of Nandarivatu, alt. 750–900 m., *Degener 14919* (USNA, A).

Very similar to *P. tetragona* Seem. but differing in the broader leaves which are pubescent beneath, the stipules without long curved apices, the pubescent corollas, and the more turbinate fruits with smaller pyrenes with much shorter keels. Easily told from *P. levuensis* Gillespie by the capitate inflorescence.

**Psychotria timonioides** Fosberg, sp. nov.

Ramuli ferrugineo-tomentosi; folia coriacea, oblanceolata vel anguste obovata, supra aurea glabra, infra pallida sparse pilosa; stipulae dense ferrugineo-tomentosae; cymae laxae dense glandulari-pubescentes, primo quadrichotome deinde trichotome deinde dichotome ramosae, quoque nodo 1-floro (flore terminali sessili), ramulis ultimis 3-floris floribus sessilibus; hypanthium basi articulatum; calyx disciformis integer.

Branchlets terete, 3–4 mm. thick, densely rusty-tomentose; leaves oblanceolate to narrowly obovate, up to 12 cm. long and 4.5 cm. wide, acute at apex, cuneate at base, coriaceous, above glabrous, lustrous, golden-yellow (when dry), beneath pale and sparsely pilose, the midrib densely so, the margins revolute, the petiole thick, 1.5–2 cm. long, densely rusty-tomentose; stipules densely rusty-tomentose, well-developed ones not available; cymes loose, 3 at a node, becoming lateral, densely glandular-pubescent, 6 cm. long (peduncle about 4 cm.), branched quadrichotomously, then trichotomously, then dichotomously, at each node, in addition to the branches, with a sessile terminal flower, each ultimate branchlet bearing a cluster of 3 sessile flowers, the flowers with an articulation at base of hypanthium; calyx pubescent without, glabrous within, thick-chartaceous, spreading to form a disk about 5 mm. across, the margin entire; disk hemispheric; corollas and mature fruit unavailable.

Viti Levu: Serua: Vatutavathe, vicinity of Ngaloa, in forest, alt. 150 m., May 5, 1941, *Degener 15180a* (A, type, USNA).

Two twigs of this remarkable species were found mixed with the type collection of *P. pittosporifolia* Fosberg, which it resembles in the yellow upper surface of the leaves. Vegetatively *P. timonioides* resembles *P. Imthurnii* Turrill, but the longer, looser, peculiarly branched inflorescence and disk-like calyx do not much resemble any species of Psychotria familiar to me. The superficial resemblance of the inflorescence to that of *Timonius* suggests the specific name.

## Readea Gillespie

The genus *Readea* has been considered to be monotypic since it was described by Gillespie in 1930. The original species, *R. membranacea,* has been collected a number of times and, although it is close to *Psychotria,* the peculiar calyx, the disk gradually attenuate into the style rather than surrounding it, and the large subcylindric fruits seem to set it off sufficiently. Two other plants have been collected in fruit which seem to be more correctly placed here than in *Psychotria.* They are described below. Of course, when they are collected in flower, if the flowers do not show the peculiar structure of *Readea,* some other disposition will have to be made of them.

**Readea membranacea** Gillespie in Bishop Mus. Bull. **74**: 35. *f. 49.* 1930.

Vanua Levu: Mbua: Southern portion of Seatovo Range, alt. 100–360 m., *Smith 504* (US, GH, NY); Thakaundrove: Vatunivuamonde Mt., Savu Savu Bay region, alt. 250 m., *Degener & Ordonez 14005* (USNA, A).

This species has previously been known from Taveuni and Viti Levu.

**Readea roseata** Fosberg, sp. nov.

Arbor parva glaber; folia late oblanceolata vel obovata obtusa chartacea; stipulae ovatae caducae; cymae in fructu axillares trichotomae; fructus cylindricus vel

fusiformis roseus 12 mm. longus 3–4 mm. latus, pyrenis dorso vix costatis apice subtruncatis.

Small tree 3 m. tall, glabrous; leaves broadly oblanceolate to narrowly obovate, up to 9 cm. long and 3.5 cm. wide, obtuse to acutish at apex, gradually, then abruptly, contracted at base to a petiole about 1 cm. or less long, the secondary veins 11 or 12 on a side, widely spreading, not very prominent; stipules ovate, early caducous; flowers not available; fruiting cymes axillary, borne in threes in the axil of one leaf, 3-fruited, the peduncle 1–1.5 cm. long, the pedicels 0.5–1 cm. long; fruits cylindric to fusiform, "deep pink," up to 12 mm. long, 3–4 mm. thick, appearing subtruncate at apex, but with a somewhat raised disk, the calyx mostly lost, but several damaged persistent ones 7–8 mm. long, tubular, lobed; pyrenes 8 mm. long, very shallowly ridged dorsally, subtruncate at apex.

VITI LEVU: Tholo North: Nauwanga, vicinity of Nandarivatu, alt. 750–900 m., Mar. 13, 1941, partly open rocky forest, *Degener 14818* (USNA, TYPE, A).

This plant seems related to *R. membranacea,* although it is known only in fruit. The leaves are smaller, thicker, and more obtuse. The cymes are much shorter and only once-branched, while the fruit is also much smaller. Flowering specimens are very much desired to confirm the generic position.

**Readea prismoclavata** Fosberg, sp. nov.

Planta glabra nodosa; folia obovata subcoriacea; stipulae bifidae infra petiolem adnatae; fructus terminalis solitarius prismoclavatus quadrangularis truncatus.

Plants glabrous, the branchlets with prominent nodes; leaves obovate, about 5 cm. long and 2.5 cm. wide, rounded to subacuminate at apex, cuneate at base, subcoriaceous, with about 8 veins on a side, the petioles 6–10 mm. long; stipules fused with petioles at base, about 5 mm. long, bifid at apex into lanceolate lobes; flowers unavailable; fruit solitary, terminal, on a pedicel 10–12 mm. long, the body of fruit clavate-prismatic, 16–18 mm. long, 5–8 mm. wide, roughly 4-sided, truncate at apex, with a prominent calyx-scar surrounding a depressed disk, with a prominent style-base, attenuate at base.

VITI LEVU: Namosi: Vakarongasiu Mt., alt. 800 m., *Gillespie 3272* (GH, TYPE).

This specimen, judging by the similarity of the fruit to that of *R. membranacea,* and of the leaves to those of *R. roseata,* should go into this genus, rather than into *Psychotria,* where Gillespie referred the specimen.

## CALYCOSIA A. Gray

Of the two original species in the genus *Calycosia,* A. C. Smith (in Bishop Mus. Bull. **141**: 153. 1936) has selected *C. petiolata* A. Gray of Fiji as the type. For several reasons the genus is not at all well understood. Considerable confusion has resulted from Gray's later inclusion in the genus of species of *Psychotria* which have an enlarged and flaring or reflexed calyx-limb. In this he was followed by Turrill and by Gillespie. The latter, however, aware of the discrepancy, placed the original elements of *Calycosia* in the genus *Uragoga* L. and used *Calycosia* for the discrepant ones. This confusion was cleared up by Smith (l. c.), who restored *Calycosia* to its original sense and erected the genus *Calycodendron* to accommodate most of the later accretions to *Calycosia.*

Gillespie, basing his judgment on the extremely inadequate fragment of the U. S. Exploring Expedition material in the Gray Herbarium, interpreted *C. petiolata* as the species described below as *C. macrocyatha,* or at least as including this species. Smith (l. c.), with some doubt, followed this disposition, as did I in working up St. John's Fijian Rubiaceae in 1939. A careful comparison with the U. S. Exploring Expedition specimens in Washington and New York shows

that *C. petiolata* is quite a distinct thing from most of the material that has been referred to it.

The principal difficulty with this genus lies in the inadequate or poorly preserved material usually obtained of it. The large water-soaked heads of flowers do not press particularly well, and are very likely to become moldy. Extra heads seldom accompany collections, and one hesitates to damage a specimen by dissecting the infloresence from it. Consequently, the morphology of the inflorescence is not well understood, and it must be admitted that the present treatment does not particularly help in this direction. Yet, the peculiar inflorescence with its involucrate bracts at each ramification seems to be the principal feature that keeps the species concerned out of *Psychotria*. The large funnelform and deciduous calyx, by itself, would scarcely set the group off generically.

Judging from the material at present available to me, there are at least three Fijian species in *Calycosia*. Of these, one is complex and may be subdivided into two varieties which may later be found to be species. I am not familiar enough with the Samoan and Tahitian species referred to this genus to decide whether they belong here or not. The following key will separate, by superficial characters not requiring dissection of the inflorescence, the three species and two varieties recognized in Fiji.

Heads relatively numerous, cymose-paniculate, the outer bracts 2 cm. or less long, open on one side, not united into a cup-like or flask-like structure .....*C. petiolata.*
Heads few (1 or 3), the outer bracts usually 2.5 cm. long or longer, completely united except at apex.
  Heads solitary, 1–1.6 cm. wide at anthesis (wider in fruit), the apical opening strongly contracted at anthesis .....*C. lageniformis.*
  Heads in threes, at least 2 cm. wide and with a wide opening at anthesis ...*C. macrocyatha.*
    Heads borne in a sessile involucre .....*C. macrocyatha* var. *macrocyatha.*
    Heads borne in a pedunculate involucre .....*C. m.* var. *kandavuensis.*

A specimen collected on Koro (*Smith 970*, GH, NY, US) is not placed, as the material at hand is inadequate. It has the broad glabrous leaves of *C. macrocyatha* but has a cymose-paniculate fruiting inflorescence similar to that of *C. petiolata*. My notes taken from the sheet of this number at New York suggest that it should probably be associated with *C. petiolata*.

**Calycosia petiolata** A. Gray in Proc. Am. Acad. **4:** 48. 1860.

*Uragoga petiolata* Gillespie in Bishop Mus. Bull. **74:** 37. 1930.

Shrub or small tree; leaves thick-chartaceous to subcoriaceous, narrowly elliptic to elliptic-oblanceolate, up to 30 cm. long and 10 cm. wide, usually sharply acuminate at apex, attenuate to a petiole at base, sparsely pilose beneath, at least near midrib; stipules united near base, bifid at apex, the margins fimbriate-ciliate; heads several to many, in a small hemispherical cymose panicle, each head about 15 mm. high and broad, the bracts at ramifications of panicle and those closely investing heads whitish, open on one side, densely fimbriate-ciliate; calyx just under 1 cm. long, cut at apex into oblong lobes about 3 mm. long, fimbriate-ciliate; corolla about twice as long as calyx, the lobes hirtellous toward apex, the throat densely woolly; bracts deciduous from the somewhat enlarged fruiting inflorescence; fruits oblong, about 7 mm. long, truncate at apex, crowned by subpersistent calyx, acutish at base, the pyrenes not keeled, but at most slightly ridged dorsally.

Viti Levu: Ra: Tuvavatu, vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15379* (USNA, A); same general locality, *Degener 15522* (USNA, A); Tholo North: Nandarivatu, alt. 800 900 m., *Degener & Ordonez 13611* (USNA, A); same general locality,

near summit of Loma Langa Mt., *Gillespie 4288* (US). OVALAU: *U. S. Expl. Exped.* (NY). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (US, TYPE).

**Calycosia lageniformis** (Gillespie) A. C. Sm. in Bishop Mus. Bull. **141:** 154. 1936.

*Uragoga lageniformis* Gillespie in Bishop Mus. Bull. **74:** 36. *f. 50.* 1930.

To Gillespie's description may be added that, prior to anthesis at least, the involucre has, at apex, two bifid lobes about 1 cm. long. The involucre is really sessile but the two subtending leaves soon drop off. When in fruit the involucre becomes much broader and open at the apex. The fruit is about 14 mm. long, red, and quite fleshy, with the pyrenes just over 1 cm. long, slightly ridged on the back, acute at base and subtruncate or slightly dentate at apex. The calyx persists for some time, but is absent at maturity.

VITI LEVU: Tholo North: Nandarivatu, *Degener 14540* (USNA, A), *Degener & Ordonez 13607* (USNA, A).

I have not seen Gillespie's material of this species, but Degener's specimens are from the type locality.

**Calycosia macrocyatha** Fosberg, sp. nov.

Frutex glaber; folia elliptica vel elliptico-lanceolata, subcoriacea, petiolata; stipulae ovato-lanceolatae, 3–4 cm. longae, infra connatae, supra bifidae, caducae; inflorescentia tricapitata involucrata, involucro cyathiformi lobato quam floribus longiore; calyx tubularis, dentatus; corolla infundibuliformis glabra valde exserta.

Slender shrub, up to 4 m. tall, glabrous, with fistulose branchlets, the internodes short (1–2 cm.), at least above; leaves ample, petiolate, the blade elliptic to oblanceolate, slightly acuminate at apex, attenuate to cuneate at base, subcoriaceous, the secondary veins numerous, prominent; stipules caducous, coriaceous, ovate-lanceolate, 3–4 cm. long, the basal 1 cm. connate, the apex deeply bifid; inflorescence of 3 pedunculate heads within a large funnel-shaped or cyathiform lobed involucral bract, this either sessile or pedunculate, axillary (or to begin with, terminal), split on one side to base, up to 6.5 cm. long, "white," the peduncles of individual heads up to 5 cm. long, the heads up to 3 cm. wide and 4 cm. long, tending to be truncate at base, surrounded by a cup-shaped white involucral bract, this usually exceeding the bracts and calyces within and open and flaring at top, coriaceous when dry; within this are smaller bracts crowded together, apparently at the nodes or ramifications of the condensed vestigial cyme, each bract surrounding a cluster of flowers, each flower surrounded by a smaller bract, the margins of these inner bracts densely fimbriate-ciliate; calyx about 15 mm. long, gradually dilated upward, with 5 unequal triangular teeth, these densely fimbriate-ciliate; corolla glabrous, about 4 cm. long, curved (at least when dry), funnelform with slender tube gradually dilated upward, the lobes 5, oblong-ovate, about 8 mm. long and 3 mm. wide, somewhat spreading, acute, slightly cucullate at apex; anthers linear, the apices slightly exserted from throat of corolla; style filiform, somewhat shorter than corolla, deeply bifid at apex; fruit unavailable.

Found, so far, on Viti Levu, Vanua Levu, and Kandavu.

Two varieties are apparent in the material available. The portion of the description above concerning the flowers was drawn from var. *kandavuensis*.

**Calycosia macrocyatha** var. **macrocyatha** Fosberg, var. nov.

Involucrum sessile, infundibuliforme, valde lobatum, caducum.

The typical form of the species, with sessile, funnelform involucral bract 6 cm. long, cut halfway into 5 unequal obtuse lobes, early caducous.

VITI LEVU: Tholo North: Nandrau, vicinity of Nandarivatu, alt. 750–900 m., *Degener 14914* (USNA, A). VANUA LEVU: Thakaundrove: Mt. Mariko, in dense forest, alt. 600–866 m., Nov. 14, 1933, *Smith 472* (US, TYPE, NY).

**Calycosia macrocyatha** var. **kandavuensis** Fosberg, var. nov.

Involucrum pedunculatum campanulatum persistente.

Involucral bract campanulate, up to 4 cm. long, persistent but becoming badly frayed, on a thick peduncle up to 6 cm. long.

KANDAVU: Mt. Mbuke Levu, dense forest, alt. 750–840 m., Oct. 25, 1933, *Smith 273* (GH, NY, TYPE, US).

COPROSMA J. R. & G. Forst.

**Coprosma persicaefolia** A. Gray in Proc. Am. Acad. **4**: 50. 1860.

VITI LEVU: Ra: Vicinity of Rewasa, near Vaileka, alt. 50–200 m., *Degener 15353* (USNA, A); Tholo North: Nandarivatu, alt. 800–900 m., *Degener 13533* (USNA, A). WITHOUT DEFINITE LOCALITY: *U. S. Expl. Exped.* (US, ISOTYPE).

The specimens cited above show certain characters not brought out by Oliver in his monograph (Bishop Mus. Bull. **132**: 138. 1935). The leaves of all three collections are considerably smaller than indicated by Oliver, so that they would key to *C. novaehebridae* rather than to *C. persicaefolia*. No. *13533* has the leaves narrowed gradually at base, rather than abruptly, which, in the key, would take it to *C. strigulosa* of Samoa. All of the collections have a peculiar type of domatia on the under surface of the leaves. These are superficial, not embedded in the blade, and seem to be lunate or hook-like outgrowths from the midrib, open toward the apex of the leaf. The vein appears to emerge from the outer curve of this structure, but an examination of the upper leaf-surface shows that the vein is really normally branched from the midrib. The leaf-margins are slightly crisped when dry. I should scarcely describe the petioles as "rather long and slender," since they are only 3–5 mm. long in these specimens. The stipules are definitely glandular-denticulate as well as conspicuously ciliate. The fruits of the U. S. Exploring Expedition specimen are somewhat ovoid, as described by Oliver, but those of no. *15353* are very small and globose. They are apparently abortive. Those of no. *15533* are well developed, 4–5 mm. long, and narrowly ellipsoid rather than ovoid. Two out of the three sectioned were 3-celled, rather than 2-celled with the third cell sterile. The pubescence, in general, is strigose, except on the margins.

No. *15353* is said to have the native name *timo* and to be used externally for aches.

CUCURBITACEAE

**Coccinea cordifolia** (L.) Cogn. in DC. Monogr. Phan. **3**: 529. 1881.

VITI LEVU: Lautoka: Lautoka, *Greenwood 825A* (GH) (creeper, in open sunny places; corolla pure white).

Apparently not previously reported from the Pacific, this Asiatic plant is probably a recent introduction to Fiji.

LOBELIACEAE

**Lobelia zeylanica** L. Sp. Pl. 932. 1753; Merr. & Perry in Jour. Arnold Arb. **22**: 386. 1941.

VITI LEVU: Tholo North: Loma Langa Trail, vicinity of Nandarivatu, alt. about 850 m., *Degener & Ordonez 13683* (GH) (along trail in rain-forest); Nandarivatu, alt. about 830 m., *Greenwood 811* (GH) (in damp grassland in open, but most common on wet shady paths in forest). VANUA LEVU: Thakaundrove: Valanga, Savu Savu Bay region, alt. 30 m., *Degener & Ordonez 13911* (GH) (in springy clearing).

The cited collections are of especial interest as representing the first record of the species, as far as I can ascertain, from east of New Guinea, and the first occurrence of the family in Fiji.

## COMPOSITAE

**Mikania micrantha** H. B. K. Nov. Gen. & Sp. **4:** 134. 1820; Christoph. in Bishop Mus. Bull. **128:** 209. 1935.

VITI LEVU: Serua: Ngaloa, near sea-level, *Degener 15084* (GH) (in wet meadow; native name: *mbosuthu*). OVALAU: Near Levuka, alt. 150 m., *Bryan 605* (GH). KANDAVU: Namalata Isthmus region, near sea-level, *Smith 13* (GH, NY) (in clearings and thickets; native name: *wa mbutako*). VANUA LEVU: Mbua: Lower Wainunu River valley, alt. 0–200 m., *Smith 1733* (NY) (pernicious weed, in clearings; native name: *wa mbosuvu*); Thakaundrove: Southern slope of Valanga Range, alt. 200–400 m., *Smith 391* (NY) (at edge of forest).

The fact that this vigorous and abundant weed has not previously been reported from Fiji in taxonomic literature indicates that it is probably of recent introduction.

**Spilanthes acmella** (L.) Murr. Syst. 610. 1774.

VANUA LEVU: Thakaundrove: Valanga, Savu Savu Bay region, near sea-level, *Degener & Ordonez 13827* (GH) (in swampy pasture).

I believe that this widespread weed has not previously been recorded from Fiji; the nearest record I can locate is from New Caledonia.

**Synedrella nodiflora** (L.) Gaertn. Fruct. **2:** 456. *pl. 171, fig. 7.* 1791; Setch. in Carn. Inst. Publ. **341:** 41. 1924; Christoph. in Bishop Mus. Bull. **128:** 210. 1935.

VITI LEVU: Rewa: Suva, near sea-level, *Degener & Ordonez 13518* (GH) (common roadside weed).

Although reported as common in many other Pacific groups, this weed has apparently not previously been reported from Fiji.

**Youngia japonica** (L.) DC. Prodr. **7:** 194. 1838.

VITI LEVU: Tholo North: Nandarivatu, alt. about 830 m., *Greenwood 801* (GH) (in damp places; flower-heads yellow).

This species, apparently becoming naturalized, has not previously been recorded from Fiji or any of the adjacent groups. I follow the recent treatment of Babcock and Stebbins (in Carn. Inst. Publ. **484:** 94. 1937) in referring the species to *Youngia* rather than to *Crepis*.

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